

# **BROOME TECHNICAL COMMUNITY COLLEGE**



**1969-70  
CATALOG**

## **ACCREDITATION**

Broome Technical Community College is a member of the Middle States Association of Colleges and Secondary Schools.

The College is supervised by the State University of New York, and its curriculums are registered by the State Education Department.

The Chemical, Civil, Electrical and Mechanical Technology programs are ECPD accredited Engineering Technology curriculums. ECPD is the Engineers Council for Professional Development, a national organization of engineering societies.

The Dental Hygiene program is accredited by the Council on Dental Education of the American Dental Association.

The X-ray Technology curriculum has been provisionally accredited by the American Medical Association, pending an accreditation visit to the campus.

**The College reserves the right  
at any time to make changes  
deemed advisable.**

**FOR INFORMATION about  
the college, its programs and its  
admissions procedure, contact**

**Director of Admissions  
Broome Technical Community  
College  
Binghamton, New York 13902  
Phone 724-4391,  
area code 607**



**1969-70 CATALOG**  
**OF**  
**BROOME TECHNICAL  
COMMUNITY COLLEGE**  
**Binghamton, N. Y. 13902**

**A Comprehensive Community College**  
**Supervised by the State University of New York**  
**and**  
**Sponsored by the County of Broome**



# CALENDAR 1969-70

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## SUMMER TERM 1969

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Aug. 29	4:30 p.m.	Summer term classes end
Sept. 2, 3, 4		Examinations
Sept. 10	7:30 p.m.	Graduation
Sept. 12		*Cooperative period ends

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## FALL TERM 1969

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Sept. 10		Orientation begins
Sept. 15	7:40 a.m.	Fall term classes begin
Sept. 15		*Cooperative period begins
Sept. 26		Last day to drop courses without grade
Oct. 10		Last day to drop courses with "W" grade
Nov. 21	4:30 p.m.	Fall term classes end
Nov. 22, 24, 25, 26		Examinations
Nov. 27—Dec. 7		Thanksgiving and between-term recess
Dec. 5		*Cooperative period ends

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## WINTER TERM 1969-70

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Dec. 8	7:40 a.m.	Winter term classes begin
Dec. 8		*Cooperative period begins
Dec. 19	4:30 p.m.	Classes dismissed—Christmas recess
Dec. 19		Last day to drop courses without grade
Jan. 5	7:40 a.m.	Classes resume
Jan. 16		Last day to drop courses with "W" grade
Feb. 27	4:30 p.m.	Winter term classes end
March 2, 3, 4, 5		Examinations
March 6		*Cooperative period ends
March 7-13		Senior placement interviews

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## SPRING TERM 1970

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March 9		*Cooperative period begins
March 16	7:40 a.m.	Spring term classes begin
March 27	11:30 a.m.	Classes dismissed—Good Friday
March 30		Last day to drop courses without grade
April 10		Last day to drop courses with "W" grade
May 22	4:30 p.m.	Spring term classes end
May 25, 26, 27, 28		Examinations
June 5	7:00 p.m.	Graduation
June 5		*Cooperative period ends

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## SUMMER TERM 1970

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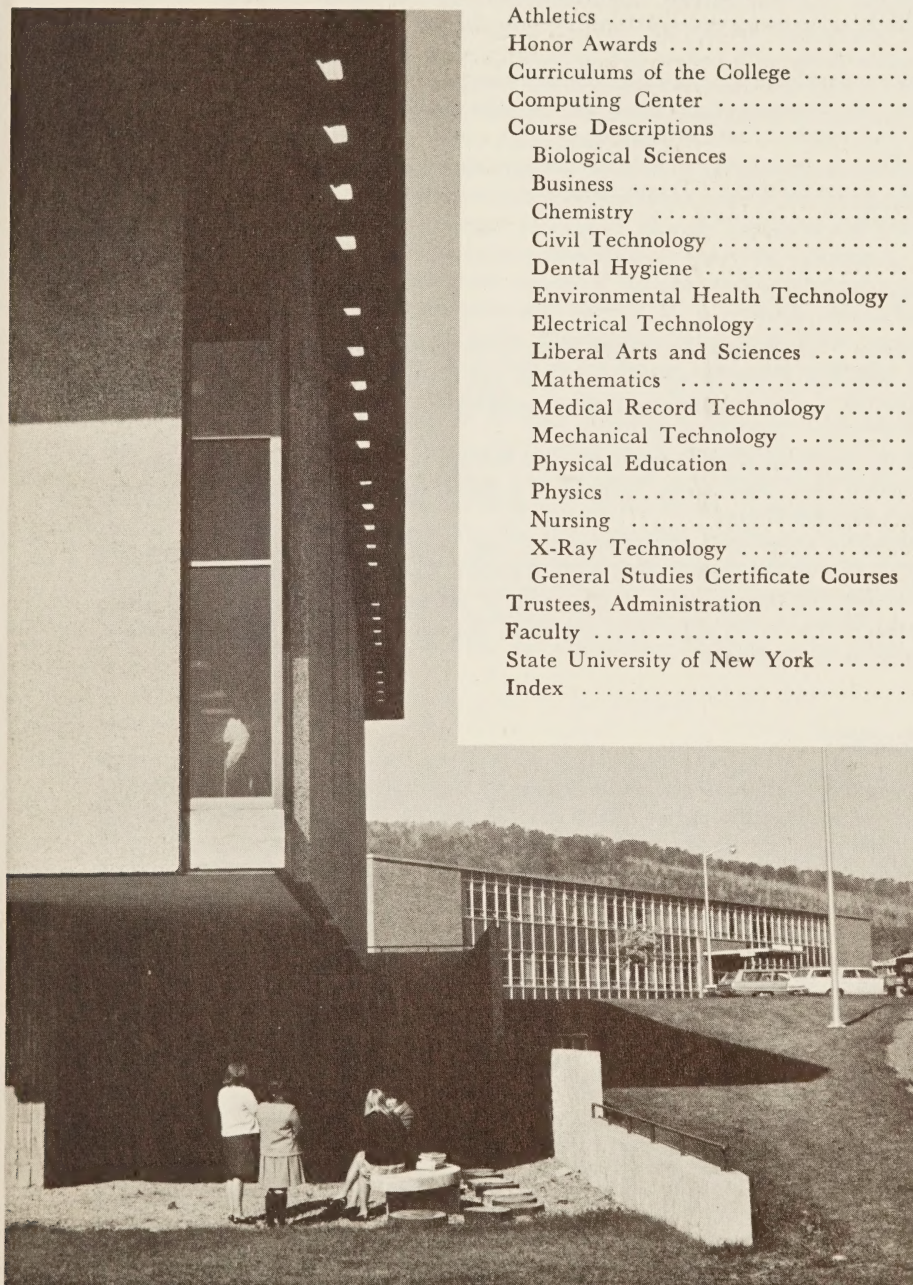
June 8	7:40 a.m.	Summer term classes begin
June 8		*Cooperative period begins
June 19		Last day to drop courses without grade
July 3		Last day to drop courses with "W" grade
Aug. 14	4:30 p.m.	Summer term classes end
Aug. 17, 18, 19, 20		Examinations
Aug. 28	7:30 p.m.	Graduation
Aug. 28		*Cooperative period ends

\* Cooperative work period for Electrical and Mechanical Technology students



# TABLE OF CONTENTS

Accreditation .....	Inside Front Cover
College Calendar .....	2
About Broome Tech .....	4
Objectives of the College .....	6
Programs of the College .....	7
Admissions Information .....	10
Academic Standards and Regulations .....	12
(Graduation Requirements)	
General Information .....	16
Tuition .....	16
Financial Aid .....	21
Library .....	27
Co-curricular Activities .....	28
Athletics .....	31
Honor Awards .....	32
Curriculums of the College .....	34
Computing Center .....	69
Course Descriptions .....	69
Biological Sciences .....	71
Business .....	75
Chemistry .....	81
Civil Technology .....	85
Dental Hygiene .....	87
Environmental Health Technology .....	90
Electrical Technology .....	91
Liberal Arts and Sciences .....	95
Mathematics .....	102
Medical Record Technology .....	106
Mechanical Technology .....	107
Physical Education .....	111
Physics .....	111
Nursing .....	115
X-Ray Technology .....	116
General Studies Certificate Courses .....	118
Trustees, Administration .....	120
Faculty .....	121
State University of New York .....	130
Index .....	132





# **ABOUT BROOME TECH**

## **THE COLLEGE**

Broome Technical Community College is a comprehensive community college. It has programs designed to prepare graduates both for immediate employment and for transfer to four-year colleges and universities at the junior, or third-year, level.

In addition to its daytime enrollment, which numbered more than 1,800 last year, the College has a Continuing Education Division which had more than 1,700 part-time evening students in the fall of 1968 and over 1,100 taking courses during the 1968 Summer Session.

The College is co-educational, publicly-supported, and has historically attracted about two-thirds of its student body from Broome County and one-third from outside the county.

The day student body can be classified into four parts, based on study objectives—university-parallel or transfer programs, the business program, engineering technology curriculums, and medically-related courses.

The College is sponsored by Broome County, supervised by the State University of New York, and accredited by both professional and educational organizations (See inside front cover).

## **THE CAMPUS**

The Broome Tech campus is located three miles north of Binghamton on Upper Front Street, which is Route 11 and Route 12 at this point running alongside of Interstate 81. Eight of the nine buildings form a quadrangle to make a compact campus layout.

Most of the buildings are two stories high, of modern functional design, and made of brick with colored panel-wall facing. They lie in a suburban setting in the virtual center of the college's 62 acres of land.

In addition to classrooms and laboratories, the campus has its own cafeteria, a fine gymnasium and athletic field, and a Little Theater. These facilities add up to make the campus a \$6,000,000 investment in the youth of Broome and surrounding counties. This investment will soon be more than tripled in the next few years, as the College's expansion program is developed.

## **THE COMMUNITY**

The community is an industrial and agricultural area in New York State's Southern Tier. It is in the approximate center of the state, measuring from East to West, and its southern extremity touches the Pennsylvania state line.

Binghamton is the principal city in Broome County, but it is an integral part of the community known as the Triple Cities. Endicott and Johnson City are the other two cities, but Vestal and other outlying suburbs help to make the community much larger in population and geography than the city limits of Binghamton.

Binghamton has a population of 75,941, yet the Triple Cities area embraces 148,524 people. The population of Broome County is 212,661. Diversified industry has made the community an economically sound one.

The College has become an integral part of the community since it was started in 1947. Many of the campus facilities are offered without charge for use by responsible organizations, and most of the College's curriculums are designed to help fill the economic needs of the county.



## GROWTH AND EXPANSION

The rapid growth in student enrollment in recent years has made it necessary for the College to embark on an extensive expansion program. A new library building was opened during the 1967-68 school year, and other new buildings are planned to accommodate an anticipated student body of 3,200 by 1974.

The Broome Tech campus was constructed in 1956 to accommodate 900 students, which was about three times the College's enrollment at that time. The student body reached double that 900 capacity last fall.

## HISTORY

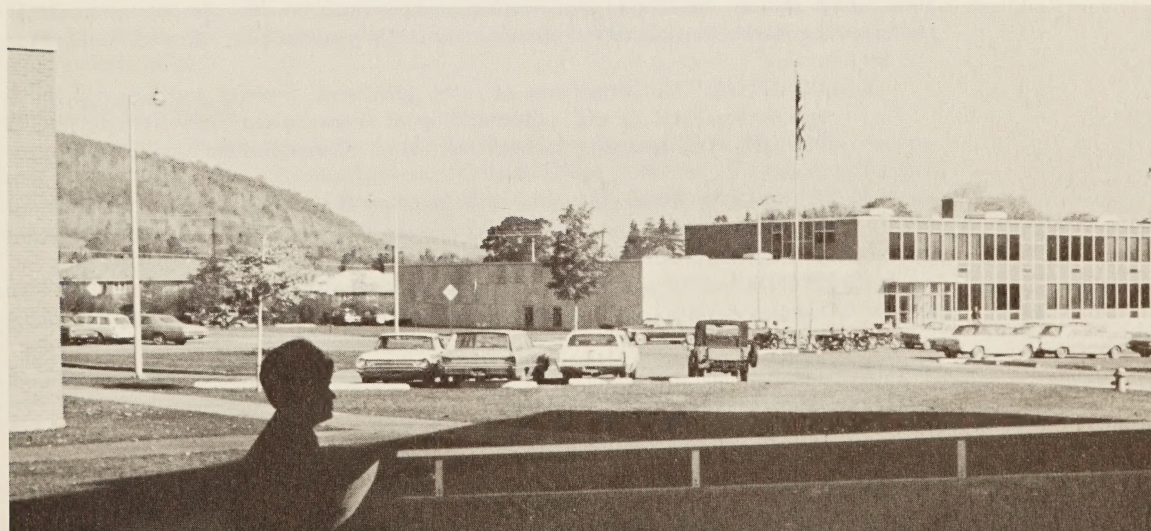
Broome Tech graduated its first class in 1949. These students had entered what was then known as the New York State Institute of Applied Arts and Sciences at Binghamton in the fall of 1947. The original institute was one of five founded in the state in 1946, following the pattern of six agricultural and technical institutes which New York had established earlier in the century. The first programs offered were all occupational in nature and included Chemical, Electrical and Mechanical Technologies, as well as Medical Office and Technical Office Assistants courses.

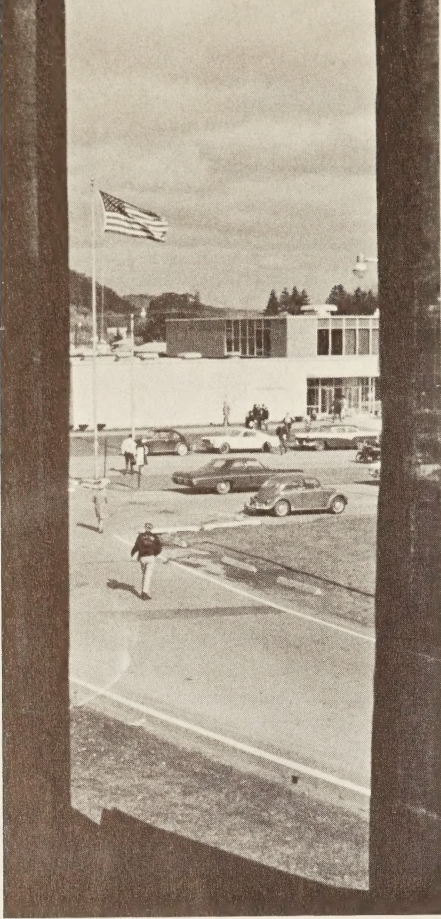
In 1953 New York relinquished operating control of the school to a new sponsor, the County of Broome, under provisions of the newly-enacted State Community College Law, and the name was changed to Broome County Technical Institute. In 1956 the name was again changed to its present one, Broome Technical Community College, to reflect the increasingly comprehensive nature of its educational offerings.

In keeping with the comprehensive objectives of this community college, a university-parallel curriculum was instituted in the Engineering Sciences in 1959, a two-year program of Liberal Arts and Sciences started in the fall of 1962, and a transfer program in Business Administration added in 1963.

X-Ray Technology was added in 1965, Medical Laboratory Technology in 1966, and Nursing and Environmental Health Technology a year later.

For its first five years, the school was housed in a refurbished State Guard armory in downtown Binghamton. This building was gutted by fire in September of 1951, and for the next five years Kalurah Temple and two other buildings in the city provided temporary quarters. In 1957 the college moved to its present campus on the north side of Binghamton on Route 11. The first addition to the original campus came with the construction of Titchener Hall, which was dedicated on May 17, 1963. A temporary classroom building was added in 1966 and the Library Building a year later.





## OBJECTIVES OF THE COLLEGE

1. To provide the environment and the experiences which promote the students' vocational competence, individual growth and social responsibility through integration of the following:

**KNOWLEDGE.** The acquisition of facts, principles, theories and insights which are fundamental to the understanding of a specialized field of study and of life itself. Cognizance of common sources of information for further intellectual growth.

**PROFICIENCY.** Development of analytical thinking and language abilities for the comprehension, evaluation and communication of knowledge. Development of laboratory techniques relevant to the students' chosen vocational fields.

**ATTITUDES.** The stimulation for personal growth—vocational, intellectual, cultural and physical. The appreciation of and commitment to desirable social values.

2. To commit the resources of the College to the business, industrial, educational and cultural enrichment of the community.



## **DEGREE PROGRAMS OF THE COLLEGE**

Graduates of Broome Technical Community College receive associate degrees, and the courses of study fall into four general categories—technical, business, liberal arts and health sciences. Liberal arts courses are included in all curriculums, as it is believed that students need more than technical competence to be successful.

Applicants to the College should consider carefully the type of program they wish to pursue, for the nature of the offerings makes it difficult for a student to switch from one curriculum to another after commencing his studies.

### **TECHNICAL PROGRAMS**

In the area of technical education, the college offers five programs. One, Engineering Science, is in effect the first two years of an engineering curriculum, and students who do satisfactory work in it should experience little difficulty in transferring to engineering colleges at the third-year level.

The other four are designed to train engineering technicians in the fields of Mechanical Technology, Chemical Technology, Electrical Technology and Civil Technology. Graduates of these programs are prepared for immediate employment in various types of technical work upon leaving the college.

### **BUSINESS**

The Business curriculum is designed primarily to prepare graduates for immediate employment in one of four fields—Engineering Secretarial, Executive Secretarial, Accounting, and Marketing and Sales. In addition, there is a fifth option, Business Administration. It combines more university-parallel preparation with a minimum of job-oriented courses for the person who plans to continue his college education for a baccalaureate degree, even though he may want to work for a while before transferring to a four-year college.

### **LIBERAL ARTS AND SCIENCES**

This curriculum is a university-parallel course, designed especially for the student who wishes to transfer to a four-year college or university after graduation. A sound liberal arts education is basic to many of the professions, such as medicine, law or teaching, and applicants who have such a goal would be well advised to make this selection. It is also considered excellent preparation for further schooling in business administration.

Many students simply do not know what field to select as a goal. A liberal arts course may serve as a foundation from which a choice of major study can be made at a later date with a minimum loss of time.

**NOTE**—Students in all programs spend at least one-fourth of their time studying such Liberal Arts subjects as English, psychology, sociology and economics. The College recognizes that, in addition to technical competence, a graduate should study those subjects which help him to understand people and their daily working and personal inter-relationships.

### **HEALTH SCIENCES**

Opportunities for men and women interested in the health services field are provided in seven areas—Dental Hygiene, Medical Office Assistant and Medical Record Technology, Nursing, Medical Laboratory Technology, X-Ray Technology and Environmental Health Technology.

Graduates of five of these curriculums are prepared to work immediately after graduation in physicians' or dentists' offices, laboratories or hospitals, while the Environmental Health Technology students are trained to fill the growing number of jobs in controlling air and water pollution, in food sanitation and in ionizing radiation.

Graduates of these programs are also qualified to take whatever licensing examinations their professions require.

# **SPECIAL PROGRAMS**

## **DIVISION OF CONTINUING EDUCATION**

Credit courses for adults are offered year-round during the evenings and during the Summer Day session. An adult may enroll in any evening course if, in the College's judgment, he has the ability to do college-level classwork and if he has the necessary prerequisites for the course. Full details about these programs are contained in the catalog available on request from the College's Division of Continuing Education.

### **Evening Session**

Evening courses lead to various evening diplomas (32 semester credit programs in Business; Chemical, Civil, Electrical, and Mechanical Technologies; Production Management; as well as General Studies). These diplomas are the bases of required study for the Associate in Applied Science Degrees in Business and in Industrial Technology, and the Associate in Arts Degree. The evening terms begin September 8, 1969 and January 19, 1970.

### **Summer Session**

Summer credit courses, many of which can be accepted by other colleges for transfer, are available during the days and evenings. Developmental and college preparatory subjects are also available as non-credit offerings. Summer semesters are scheduled to start on June 23, 1969 and June 22, 1970. Summer Session catalogs may be obtained from the Division of Continuing Education.

### **Part-Time Day Students**

Enrollment as part-time day students will be on a strict space-available basis. Registration will be conducted by the Division of Continuing Education and generally will be held the first day of the term at 8 a.m. in the Student Center. Late registration will be accepted only during the first five class days of the term.

Individuals may register for part-time day enrollment for a maximum of 6 term credit hours by applying directly to the Director of the Division of Continuing Education at registration time. Only in exceptional circumstances will applicants be permitted to enroll for a maximum of 12 term credit hours, subject to the approval of the Admissions Committee of the College. Broome Tech graduates, however, need only have prior approval from the department chairman.

A part-time day student will not be permitted to enroll in the subsequent day term if in day courses he has received two "F" grades, two "P" grades, or a "P" and an "F" grade in one day term or in two consecutive day terms. Exceptions to this policy may be considered for unusual circumstances. In these cases students must petition in writing the Director of the Division of Continuing Education, who will make final determination.

Part-time students who withdraw from courses must complete the proper termination procedures at the Division of Continuing Education office.

All individuals admitted on other than a full-time basis will be subject to policies governing students in the Division of Continuing Education, in addition to regulations governing full-time students. Such enrollment does not automatically make the enrollee a candidate for an Associate Degree.





### **Tuition and Fees for Part-Time Day Students**

Residents of New York State will pay \$10 per lecture quarter credit hour and \$20 per laboratory credit hour as tuition for courses they enroll in. Out-of-state residents must pay \$20 and \$40, respectively.

There is also a student activity fee of \$2 per term for each part-time student enrolled in day classes. This entitles students to admission to convocations and special film events, to issues of Tech Talk, the student newspaper, and to membership in student organizations. It does not, however, include admission to varsity sports events nor to copies of The Citadel, the College yearbook. In no case should a student be charged more than the full-time student activity fee of \$38 per academic year.

Out-of-county residents will need certificates of residence. See page 16. Broome County residents may complete residency forms at registration.

### **GENERAL STUDIES CERTIFICATE PROGRAM**

Students who either lack the minimum requirements for admission to the regular programs of the College, or those who have been out of school for several years, may request enrollment in the General Studies Certificate Program. This is a year-long sequence of study emphasizing the fundamental concepts of English, mathematics and science. Students in this program are considered regular college students, although few credits are granted for completion of these courses. These students are eligible for all campus social events and co-curricular activities, except varsity athletics. At the end of the year, students are evaluated by the faculty and must be recommended for entrance to a regular program before being admitted in the subsequent year. This was formerly known as the Pre-Tech program.

### **DIPLOMA NURSING**

Nurses in diploma training programs at Binghamton General and Binghamton State Hospitals take part of their first year of study at Broome Tech. Under this program these students may participate in all activities of the college except varsity athletics.

# ADMISSION

A high school or state equivalency diploma is required for entrance to all curriculums. All applicants must take the Scholastic Aptitude Test of the College Entrance Examination Board, and must meet the minimum requirements of physical ability required by the occupational field in which they wish to engage. They must also be recommended by their high school principal or guidance counselor.

## Application Procedure

New students are admitted only at the beginning of the school year in the fall. However, applications will be accepted at any time.

An application for admission must be made on official forms supplied on request by the Admissions Office.

A deposit of \$10 must accompany each application. The deposit is non-refundable but is applied as an advance payment on the student activity fee if the application is accepted. Once a student is accepted, he will be billed for an advance payment of \$50 on tuition. This is also non-refundable.

The Committee on Admissions may require an applicant to participate in an admissions counseling interview. Counseling interviews are not required of all applicants, but they may be requested by the applicant.

NOTE—Applicants who do not satisfactorily meet the entrance requirements may apply to enter the General Studies Certificate program. This preparatory year program provides opportunity for the student to strengthen his academic background so that he may enter any full-time program of the College with a better expectation of successful accomplishment.

## Readmission or Transfer

Applications for readmission or transfer to the College must be submitted to the Admissions Office prior to three weeks before the start of the term in which the applicant is requesting readmission. Applications received later than the above period may be returned to the applicant by the Director of Admissions without processing.

Transfer of credit from students who have been enrolled in other accredited colleges is subject to the approval of the chairman of the student's major department and the director of records. Students who have attended one or more other colleges must in all cases submit to the College Admissions Office an official transcript of work taken before formal acceptance will be granted.

Students transferring from other colleges will, as a general rule, be expected to complete a minimum of one year's work at Broome Tech, immediately prior to being granted the Associate Degree.

## Credit by Examination

Advanced Placement Examinations and College Proficiency Exams:

Applicants who have completed any of the Advanced Placement Examinations sponsored by the College Entrance Examination Board or the College Proficiency Examinations sponsored by the University of the State of New York may apply for credit and advanced placement. Such requests will be handled like transfer credit and will be granted where applicable, subject to the approval of the department chairman and director of records.



## Entrance Requirements

In planning for college, it is advisable that each high school student enroll in a college preparatory curriculum. The following table should help in planning a high school program.

<u>Curriculum</u>	<u>Recommended High School Subjects</u>	<u>Other Desirable High School Subjects</u>
Business: Accounting Business Admin. Marketing Secretarial	*2 units Mathematics 2 units Science	College preparatory courses
Chemical Technology	Chemistry *3 units Mathematics including Trigonometry	Physics, Additional Mathematics, Technical courses
Civil Technology	Physics *3 units Mathematics including Trigonometry	Additional Mathematics, Technical courses
Dental Hygiene	*2 units Mathematics Biology, Chemistry	Social Studies, Typewriting
Electrical Technology	Physics *3 units Mathematics including Trigonometry	Additional Mathematics, Technical courses
Engineering Science	Chemistry, Physics *3½ units Mathematics incl. Advanced Algebra	Additional Mathematics, Science and Technical courses
Environmental Health Technology	*2 units Mathematics 2 units of Laboratory Science	Additional Mathematics and Science
Liberal Arts and Sciences	*2½ units Mathematics 4 units in any combination of science, language, or additional Mathematics	College preparatory courses
Mechanical Technology	Physics *3 units Mathematics including Trigonometry	Additional Mathematics, Technical courses
Medical Laboratory Technology	*2 units Mathematics 2 units of Laboratory Science	Typing, Additional Mathematics and Science
Medical Record Technology	*2 units Mathematics 2 units Science	Typing, Additional Mathematics and Science
Nursing	*2 units Mathematics, Biology, Chemistry	College Preparatory Courses
X-ray Technology	*2 units Mathematics 2 units of Laboratory Science	Typing, Additional Mathematics and Science

\* Academic units of mathematics such as algebra, geometry or trigonometry.

# ACADEMIC STANDARDS AND REGULATIONS

## Requirements for Graduation

Common requirements for all three degrees granted by the College:

1. Quarter point average must total 8.60 for a six-quarter program or the equivalent
2. Recommendation of the faculty for the awarding of the degree
3. Satisfaction of all obligations to the College

### THE ASSOCIATE IN APPLIED SCIENCE DEGREE

This degree is given to graduates of these curriculums:

Accounting	Marketing Management
Chemical Technology	Mechanical Technology
Civil Technology	Medical Laboratory Technology
Dental Hygiene	Medical Office Assistant
Electrical Technology	Medical Record Technology
Engineering Secretarial	Nursing
Executive Secretarial	X-Ray Technology
Environmental Health Technology	

4. Degree requirements: a minimum of 96 quarter credits
5. Curriculum requirements:
  - a) A minimum of 60 credits in a student's major field. These are courses intrinsic to and required by the various curriculums.
  - b) A minimum of 30 credits in general education or liberal arts courses.
    - 1) Social Sciences: a minimum of 9 credits
    - 2) Biological and Physical Sciences (including Mathematics): a minimum of 9 credits
    - 3) Humanities: a minimum of 9 credits in English (composition and/or speech)
    - 4) Electives (or additional courses) in the foregoing fields comprising a minimum of 30 credits in the liberal arts and sciences or general educational areas
  - c) Satisfactory completion of all courses in a curriculum or as approved in a department
6. Satisfactory completion of required co-operative work periods for Electrical and Mechanical Technology students, Summer Hospital Radiographic Technique program for X-Ray Technology students, and clinical laboratory experience for Medical Laboratory Technology students

### THE ASSOCIATE IN SCIENCE DEGREE

This degree is awarded to graduates of the Business Administration and Engineering Science curriculums.

4. Degree requirements: a minimum of 96 quarter credits
5. Curriculum requirements:

At least 45 credits in the humanities, natural sciences, mathematics, the social sciences



## THE ASSOCIATE IN ARTS DEGREE

This degree is awarded to graduates in the Liberal Arts and Sciences curriculum.

4. Degree requirements: a minimum of 99 quarter credits  
(including physical education)
5. Curriculum requirements: a minimum of 72 credits distributed as follows:
  - a) Social Sciences: a minimum of 18 credits
  - b) Biological Sciences and Physical Sciences: a minimum of 12 credits
  - c) Mathematics: a minimum of 9 credits  
(this requirement may be satisfied if candidate has completed  $3\frac{1}{2}$  units of secondary mathematics through Advanced Algebra or the equivalent)
  - d) Humanities: a minimum of 27 credits, of which 18 shall be in English (composition, speech, and literature) and 9 of which shall be in other subjects in the humanities
  - e) Electives: 80% shall be in the fields of study listed above
  - f) Physical Education: a minimum of 6 credits. Exception to this requirement may be made by the Dean of the College
  - g) Satisfactory completion of all courses in a curriculum or as approved in a department



## Grades

Grade	Honor Points Per Credit Hour	Explanation
A	4	Outstanding achievement in meeting the objectives of the course
B	3	Above average achievement
C	2	Average achievement
D	1	Below average achievement
P	0	Poor achievement—no honor points
F	0	Failure to meet the objectives of the course
W	0	Withdrawal from course within first four weeks of term
I	0	Incomplete. Work to be made up within one week or by special arrangement with the department
S	0	Satisfactory. (Final grade for a non-credit course or a mid-term grade in a credit course to denote a student's progress.)

In order for a student to remain in good standing, he must also demonstrate mature attitude, interest and cooperation.

Grades are issued at the end of each term. Students will also be notified of their academic standing at the approximate mid-point of each term. Satisfactory progress will be denoted by an "S" letter grade. Progress below average (below C) will be denoted by an appropriate letter grade.

## Honors

At the end of each term, students who have earned an average of 3.5 or better are named to the President's List. Those with averages between 3.0 and 3.49 are placed on the Honor Roll.

## Academic Probation

A student is placed on academic probation for any of the following reasons:

If he does not earn a grade point average of:

1.2 the first term

1.4 the second term

1.5 the third and all other terms

OR

If he receives an "F" in any course.

## Dismissal

Students may be considered for dismissal for the following causes: More than one consecutive probationary period, more than one failing grade in a term, failure to earn a point average of 1.0 in any term, irregular attendance, neglect of work or financial obligations, failure to comply with College rules and regulations or official notices, conduct unbecoming a student.

Any action leading to the requested withdrawal of a student is taken up by the Executive Committee. Any student may petition his department staff to waive the academic requirements of the College leading to dismissal; such petitions are acted upon by the Executive Committee upon their presentation by the department concerned. The College reserves the right to be the sole judge in all matters pertaining to dismissal.

Students who are dismissed from the College will not be permitted to re-enroll in the day school term subsequent to the dismissal action.





## **Attendance Regulations**

Every student is expected to attend all sessions of classes and laboratory work for which he is registered, and all absences and tardiness will be recorded.

Excuses for absences will be granted in accordance with instructions outlined in the Student Handbook. Unexcused absences from classes may be considered valid reason for dismissal or other disciplinary action.

## **Withdrawal from the College**

A student compelled to withdraw at any time must immediately notify the Student Personnel Office and complete the proper termination form. Failure to comply with this regulation will cause the individual to forfeit his right to honorable dismissal and to lose any refund of fees.

A student who withdraws from the College will receive a W grade in each course, with these exceptions:

If his withdrawal is in the first two weeks, he may receive no grade at the discretion of the director of records. If he has been in class more than four weeks, his grade may be an F if the department chairman so requests. And if he has completed the course, his grade will be that reported by the instructor.

## **Withdrawal from Courses**

Permission to withdraw from courses must be secured from the student department chairman or his faculty advisor.

A student permitted to withdraw from a course during the first two weeks of the term will have no indication of such registration on his permanent official college record.

If a student is permitted to withdraw during the third or fourth week he will have W's entered on his permanent record.

If a student is permitted to withdraw from a course beyond the fourth week, he will receive an F grade.

If, for reasons of health or circumstances beyond his control, the student is counseled by his department chairman and the Dean of the College to drop a course, he will receive a W.

# GENERAL INFORMATION

## EXPENSES

Tuition and fees are payable at the Finance Office. All students will be required to pay their tuition and fees for the first quarter by September 9. Any refund is at the option of the College.

### Tuition

For New York State residents	
With residency certificate .....	\$400 per year
(Payable \$134 at the start of the first term and \$133 at the beginning of the second and third terms)	
Without residency certificate .....	\$800 per year
(Payable \$268 at the start of the first term and \$266 at the beginning of the second and third terms)	
See below for explanation of residency certificate.	
For out-of-state residents .....	\$800 per year
(Payable \$268 at the start of the first term and \$266 at the beginning of the second and third terms)	

After acceptance by the College, the student will be billed for an advance payment of \$50. This will be applied toward the tuition payment for the first quarter, but it will not be refunded should the student withdraw either before or after registration. Tuition for all students is payable at the beginning of each quarter of the school year, regardless of cooperative work assignment.

The responsibility for payment of tuition rests upon the student. At the beginning of each school year, the College advises parents of the initial required payment, but this is usually not done in subsequent quarters. Students will be suspended from classes if the established due dates for payment are not met.

### Certificate of Residence

To qualify for the resident tuition fee, a student is required by law to present once each academic year on or before registration a certificate of residence indicating that he has been a legal resident of the State of New York for one year and of the county in which he resides for six months.

**Broome County Residents**—Full-time students admitted to the College will be mailed a copy of the application for certificate of residence prior to registration. This application must be completed and presented at time of tuition payment.

**Out-of-County Residents**—Full-time students admitted to the College will be mailed a copy of the application for certificate of residence prior to registration. The application must be completed, notarized, and presented to the **County Treasurer of the county in which the student resides**. The County Treasurer will then issue a certificate of residence to the student. This certificate of residence must be presented at the time of tuition payment.

Part-time students must meet the same requirements as stated above. The application for certificate of residence form is available at the Finance Office and the Office of the Director of the Continuing Education Division.

The completed residence forms are required once each academic year.



## Fees

The following fees will be charged, with the College reserving the right to change any of them:

### STUDENT ACTIVITY ..... \$38 per year

The \$10 deposit required with the application becomes advance payment on the activity fee, if the applicant is accepted. The activity fee entitles students to admission to varsity games, dances and parties, as well as a subscription to the student newspaper (Tech Talk) and the opportunity to participate in a varied program of co-curricular activities, including intramural athletics.

### HEALTH ..... \$23 per year

This fee covers the cost of the student health insurance program. If a student is covered under his family's health insurance, however, a statement to this effect will be accepted instead of the health fee, if the statement is signed by a parent or by the student, if he or she is of age. This statement should cite the name of the insurance program under which the student is covered, and it should be turned in to the Finance Office.

### ACCIDENT ..... \$7 per year

This is a mandatory fee for all full-time day students. The policy covers the student for 12 months starting September 1, 1969, for expenses incurred in or out of any hospital, and regardless of any other insurance he or she has.

### GRADUATION ..... \$20

This fee is paid at the start of the term preceding graduation.

## Living Accommodations

The College has no dormitory facility and assumes no responsibility for student housing. As a service to students, the Student Personnel Office maintains an up-to-date record of housing accommodations which landlords submit as being available. But this constitutes neither approval nor rating by the College. Housing arrangements must be made directly by students and parents with local landlords.

All students not living with their families while enrolled at the College must register immediately with the Student Personnel Office. In addition, they must complete the housing form for each address that they have while attending College. This form must be signed by the parents or guardians thus showing their approval of the students' housing accommodations.

## Room and Board

The cost of room and board for out-of-town students is dependent upon the demands of the student. The average cost varies from \$25 to \$35 per week.

## Books, Supplies, Uniforms

Each student provides at his own expense the necessary books and instructional materials. These may be purchased at the College Bookstore maintained by the Faculty-Student Association for the convenience of the students. The cost varies, depending on the curriculum, from about \$45 to \$125 per year.

In addition, some curriculums require uniforms. Among these are Nursing, X-ray Technology and Medical Laboratory Technology. Gym clothes are necessary for physical education classes, which also have a \$10 expense for bowling, which is a course requirement. Dental instruments and uniforms for Dental Hygiene students cost approximately \$100.

## Cooperative Work Program

In the Cooperative Work Program, students are placed in jobs related to their major field of study for two employment periods. Students are paid the prevailing wages for the jobs they do. Cooperative students in the Electrical and Mechanical Technology curriculums earn about \$800 to \$1200 during each cooperative period.

The program offers other distinct advantages:

1. It is exploratory. The student has a chance to survey and evaluate a number of different jobs within his field. At the same time he can take stock of his own abilities and interests.
2. It is an opportunity to correlate classroom studies with actual work experience.
3. It is a means of demonstrating the importance of human relations in the work situation.

Cooperative work students are expected to "earn their own way," to perform the duties required without special favor. At the end of the period, employers submit a report covering the students' performances.





## **Transfer to Senior Institutions**

Students desiring to transfer are encouraged to consult with their faculty advisor, department chairman or a counselor in the Student Personnel Office for assistance in selecting colleges that are appropriate for their goals and demonstrated college achievement.

Broome Technical Community College will not as a general rule encourage students who have less than a C (2.0) average to transfer to other colleges.

An applicant for transfer who will not complete the requirements for the Associate Degree at Broome Technical Community College prior to the time of anticipated transfer may not be recommended for transfer, if the faculty of the college feel the applicant has not completed a desirable breadth or depth of study to provide suitable criteria for measuring academic ability.

The following procedures are to be followed by students desiring transfer:

1. Initiate an application to transfer by applying directly to the college. Applications should be submitted during December and January of the second year. Applications submitted after these dates involve the risk of being deferred or returned due to a lack of space at the four-year college.
2. Fill out Section I (in duplicate) of the Transfer Record Form in the Student Personnel Office. Students in Liberal Arts and Sciences, Engineering Science and the Business Administration curriculums will be requested to complete the Transfer Record Form regardless of their intention to transfer immediately upon graduation from Broome Tech.
3. Complete a Request For Transfer of Academic Record Form in the Student Personnel Office for each college to which they are applying.
4. Forward request for references or recommendation forms from other colleges to the Student Personnel Office.

Please review these procedures carefully. Omission of any step may result in a delay of your records being forwarded to another college. If you have any questions regarding the above procedure, go to the Student Personnel Office.

## **Length of Curriculum**

All associate degree programs are two years in length. The college year is divided into four terms of approximately eleven weeks each. Students enrolled in the cooperative work curriculums—Electrical Technology and Mechanical Technology—spend a total of six terms on campus and two terms in industry, X-ray Technology students must take courses during two summers on campus and at local hospitals, and Medical Laboratory Technology students must complete two terms of clinical laboratory experience. Students in the other curriculums spend three terms on campus each year.

## **Repeating Courses**

A student who wishes to repeat courses already taken at Broome Tech should secure permission from his department chairman or advisor and should ask that the college policy on repeating courses be explained.

All courses in which a student registers will be shown on his permanent record subject to the conditions of the withdrawal policy. Thus if a student repeats a course, both enrollments and both grades will appear. When a student repeats a course, the most recent grades and honor points earned will be used to determine his term and cumulative averages.

## **Auditing Courses**

College policy does not permit registration for the purpose of "auditing" courses.

## **Late Registration**

An applicant may not register later than one week after the beginning of the fall term except by permission of the Dean of the College.

## **FACULTY-STUDENT ASSOCIATION**

The Faculty-Student Association of Broome Technical Community College, Inc., is an educational corporation designed to provide to the College, and particularly to the students and faculty, services that are not provided for in the regular College budget.

It provides the corporate organization through which the student fees are expended under a budget prepared by the Student Council and such other organizations as the Athletic Board of Control and the Convocation Committee. It also operates the College Bookstore and the cafeteria.

Through the modest earnings of the bookstore the income from student fees is augmented to support new or special activities and to obtain needed equipment.

The association is governed by a board of directors elected by members who are certain student and faculty members, identified by the offices they hold on campus.

The operating philosophy is to make the educational program outside of the classroom a well-rounded supplement to the academic experience of the student.

## **NUCLEAR PHYSICS LABORATORY**

One of the most modern facilities at Broome Tech is the Nuclear Physics Laboratory, which is an example of the College's constant effort to provide the most up to date education available. The laboratory is used to introduce seniors in the Engineering Science curriculum to the nuclear physics field, and Chemical Technology seniors use it in their advanced quantitative analysis course. They learn the most modern methods being employed in industry and science, as there are now many industrial uses for radioactive materials. Some courses in the College's X-ray and Medical Laboratory Technology curriculums are given in the laboratory.

A \$12,000 grant from the Atomic Energy Commission provided the funds to equip the laboratory.

## **AUDIO-VISUAL AIDS**

Students and faculty have many audio, visual and audio-visual aids at their disposal through the Audio-Visual Center. These can be used for classroom or co-curricular purposes, and they include portable TV tape recorder, films and film strips, a preview room, an art workshop, tape recorders, transparent and opaque overhead projectors, as well as slide projectors.

The center makes signs and posters, handles the ordering, distributing and locating of films for faculty members, and provides the materials and assistance in the art workshop.

The College's photo and duplicating facilities are also part of the Audio-Visual Center.



# FINANCIAL AID

More and more financial aid is becoming available for young people seeking a college education, with the result that fewer men and women are being denied the advantages of higher education because of the costs.

Financial aid at Broome Technical Community College falls into three broad categories—awards, loans and part-time work. The awards are scholarships and grants that do not have to be repaid; the loans must be paid back but the repayment plans are lenient and the interest rates low; part-time work is arranged through the College and coordinated with the student's academic schedule.

**The College has a financial aids brochure with more detailed information than appears here. This brochure is available in the College Financial Aids Office (Room A-114).**

The College is affiliated with the College Scholarship Service (CSS) of the College Entrance Examination Board. Participants in CSS subscribe to the principle that the amount of financial aid granted a student should be based upon financial need. The CSS assists colleges and universities and other agencies in determining the student's need for financial assistance.

Entering students seeking scholarship assistance are required to submit a copy of the Parents' Confidential Statement (PCS) form by April 15 to the College Scholarship Service, designating Broome Technical Community College as one of the recipients. For National Defense Student Loan candidates, August 15 is the deadline date. The PCS form may be obtained from the College, a secondary school or the College Scholarship Service, P.O. Box 176, Princeton, New Jersey 08540.

## The Broome Technical Community College Foundation

The College has established this Foundation to help students overcome economic barriers to higher education. It has established a Scholarship Fund by enlisting the cooperation of industries, organizations and individuals in the community. Their contributions are administered by the Foundation to assist needy and qualified students. About 75 scholarships and grants of at least \$300 are made possible each year by the Foundation.

The Foundation also collects and distributes funds to aid in the improvement and growth of faculty capabilities, thus enabling faculty members of the College to take graduate work and to attend seminars, workshops and conferences in their field.

## AWARDS

### Scholar Incentive Awards

Most students attending Broome Technical Community College who are New York State residents are eligible for a Scholar Incentive Award. This award is a direct grant payable to the student each term, and it amounts to \$100 or \$200 for the academic year, depending upon the net taxable income of the student's family.

It is the individual student's responsibility to obtain and complete the necessary application forms. These may be obtained from the University of the State of New York, The State Education Department, Regents Examination and Scholarship Center, Albany, New York 12224. For fall benefits, applications should be filed before July 1, but will be accepted up to December 1. The deadline date for winter and spring applications is April 1. Students must apply once a year.

Students who are eligible for these awards must pay full tuition upon registering. Their award checks will be remitted to the student by the Finance Office when received from the state. The Award Certificate sent to each student from Albany is not acceptable as a credit toward tuition.

Details are available in the Financial Aids Office.



### **New York State Regents Scholarships**

Recipients of New York State Regents Scholarships may use them at the College, although the Regents Scholarship for Engineering and Scientific Studies is applicable only to the Engineering Science Program.

### **Federal Government Grants**

**Educational Opportunity Grants** are available to exceptionally needy students under provisions of the Higher Education Act of 1965. These grants range between \$200 and \$1,000 for the academic year, depending upon need, and they are normally in effect for four years of undergraduate education. Applicants must submit a Parents' Confidential Statement prior to April 15.

**Service veterans** with at least six months of active duty since January 31, 1955 are eligible to receive at least \$130 a month (more if they have dependents) for full-time study from the Federal government, under the Veterans Readjustment Benefits Act of 1966 as amended. Beneficiaries of this financial aid should be aware that they will probably not receive their first monthly payment until about two months after the start of the fall quarter. Recipients of this financial aid are not eligible for Regents Scholarships.

More information is available in the Financial Aids Office.



## Grants-in-Aid

About 75 grants-in-aid of about \$300 each have been established to recognize outstanding scholarship and/or financial need of applicants to Broome Technical Community College. These awards are made primarily to entering freshmen students to help defray most or all of the first year's expenses. Students may apply for these grants at the time of making application for entrance to the College.

Contributors to the scholarship fund of the Broome Technical Community College Foundation include:

Administrative Management Society, Triple Cities Chapter	Kason Hardware
Binghamton Container Company, Inc.	Kent Drug Stores
Binghamton Rotarians	Wilbur J. Kupfrian
Binghamton Rotary Club	Link Division of Singer-General Precision, Inc.
The Binghamton Savings Bank	Marine Midland Trust Company
Broome Tech Alumni Association	Mr. and Mrs. Wallace W. McDowell
Broome Tech Women's Club	David E. Meade Scholarship awarded by Kiwanis Club of Binghamton
Cadre Division of Bunker Ramo	James R. Mowry
Clark-Cleveland, Inc.	New York State Electric & Gas Corp.
Collegiate Administrative Management Society Chapter at Broome Tech	Mr. and Mrs. Richard Parish
Conrad & Virginia Klee Foundation, Inc.	Mr. and Mrs. Frank Patch
Endicott Forging & Manufacturing Co.	Raymond Corporation
Endicott Johnson Corp.	Leonard J. Robilotti
First-City National Bank	Scintilla Division, Bendix Aviation Corporation
Fowler, Dick & Walker	Stack Electronics
GAF	Linda Stanford
L. F. Hamlin, Inc.	David L. Stewart
International Business Machines Corporation	Dorothy Titchener

## Endowment Fund Grants

Individuals and industrial and professional organizations have donated and/or willed money to the Broome Technical Community College Scholarship Endowment Fund. This money is invested to produce interest or dividends that are used to establish grants-in-aid. Ten grants from this source are:

**Neva M. Ash Memorial Scholarship.** Miss Ash served with distinction in many capacities on the faculty from the first days of the College in 1947 until her death in 1963.

**Bernard H. Chernin Scholarship.** These two scholarships are given in recognition of the outstanding contributions these two men have made to the College as members of its Board of Trustees, of which both are now emeritus members.

**Donald W. Emmons Memorial Scholarship.** Mr. Emmons, a highly respected member of the faculty, served the College from 1947 until his death in 1964.

**Ann Tyrrell Heybey Memorial Scholarship.** Mrs. Heybey is the late daughter of Broome Tech President and Mrs. Tyrrell. Before her marriage she worked in the Broome Tech Library during two summers, and this scholarship was established through the many generous donations of thoughtful friends of the family on the occasion of her untimely death in August, 1966.

**Dr. James T. Ivory Memorial Scholarship.** Dr. Ivory was one of the original members of the Board of Trustees and the only one still serving at the time of his death in April, 1964. He had been a tireless worker on behalf of the College, and the Dental Hygiene Clinic was renamed in his honor shortly after his death.

**Mrs. Charles F. (Jeanette) Johnson Memorial Scholarship.** Mrs. Johnson and her husband were both devoted supporters of education and of local institutions. Her support of Broome Tech began in the early days of the College's Student Aid Association and continued until her death.

**S. David Molyneaux Memorial Scholarship.** Dr. Molyneaux was a highly regarded member of the faculty from 1959 until his death in 1963. Moreover, he served the community's cultural and scientific needs with an unusual dedication that won him many friends and much respect.

**Paul F. Titchener Memorial Scholarships (2).** Mr. Titchener was chairman of the College's Board of Trustees from the day it first met in 1947 until he resigned in 1957. He was instrumental in having the state establish a two-year college in Binghamton in 1947, and he continued to serve as a trustee until his death in 1963.

## Special Grants and Scholarships

Following are specially designated scholarships:

**Athletic Board of Control Awards.** Scholarship help to out-of-town applicants who can meet all entrance requirements and have financial need and outstanding ability as a basketball player.

**Alumni Athletic Awards.** The Broome Tech Alumni Association grants scholarship help to out-of-town applicants who can meet all entrance requirements and who in addition have financial need and have shown outstanding ability as a basketball player.

**American Business Women's Association Scholarship.** This award of \$250 is given to a female student in the Business curriculum who needs financial assistance and has demonstrated academic ability.

**Binghamton Chapter, National Secretaries Association Scholarship.** Established in 1954. One scholarship of \$200 to be awarded to a young lady graduate of one of the Broome County high schools entering a secretarial option of the Business curriculum. Recipient to be judged on the basis of scholastic ability, character, personality and financial need.

**Binghamton Truck Sales Award.** A \$300 award to a student who meets all entrance requirements and has financial need and outstanding ability as a basketball player.

**Broome County Association of Highway Officials.** An annual award of \$300, with \$200 to be given the first year and \$100 for the second year. Awarded to a graduate of a Broome County high school, and the recipient must be a resident of Broome County.

**Broome County Dental Society Scholarship.** One scholarship of \$100 and a plaque awarded at capping service to a Dental Hygiene student who showed outstanding ability and campus leadership during her freshman year.



- Broome County Medical Society Scholarship.** An annual award of \$200 to that student completing the first year in the Medical Office Assistant program who has been selected by the faculty on the basis of aptitude, initiative and scholarship.
- Civic Club of Binghamton Award.** Established in 1953. Awards of \$250 are given to two young women, graduating from one of the Binghamton high schools and wishing to enter the College.
- Endicott Rotary Club Scholarship.** An annual award of \$300 granted to a graduate of Seton Catholic High School or Union-Endicott High School in the city of Endicott.
- Fairbanks Company Scholarships.** Five awards of \$400 each are financed annually by the Fairbanks Co. Preference is given first to sons and daughters of employees of the company, and secondly to graduates of the three Binghamton high schools—Central, North and Catholic Central. The Scholarship Committee of the College will select the recipients, and \$200 of each award will be distributed each year to them. The eligible applicants must file an application form before May 1 and prior to admission to the College. Withdrawal from the College will terminate the award.
- Hillcrest-Port Dick Kiwanis Club Scholarship.** A \$200 scholarship to be awarded to a high school graduate residing in the Chenango Valley School district. The Foundation Scholarship Committee will select the recipient on the basis of scholastic ability and financial need.
- Johnson City Lions Club Scholarship.** Annual award of \$200 awarded to a graduate of Johnson City High School.
- Ellis and Gladys Klepfer Scholarship.** A \$300 award to an applicant who can meet all entrance requirements, and who in addition has financial need and has shown outstanding ability as a basketball player.
- Burton Koffman Foundation Award.** A \$250 award to a student who meets all entrance requirements and has financial need and outstanding ability as a basketball player.
- Edward L. Nezelek, Inc., Scholarship.** A \$400 scholarship, with preference to be given to the son or daughter of an employee of Edward L. Nezelek, Inc.
- Norwich-Eaton Foundation Scholarships.** Four \$300 scholarships (to two seniors in Chemical Technology and to two seniors in Medical Laboratory Technology). The scholarships are distributed \$100 each term for the three terms of the senior year. The recipients are selected by the scholarship committee primarily on the basis of financial need, with consideration of academic achievement.
- Cy Pearis Award.** A \$300 award to an applicant who can meet all entrance requirements, and who in addition has financial need and has shown outstanding ability as a basketball player.
- Lou Rappaport Freshman Scholarship.** One scholarship of \$200 to be given to a worthy student graduating from Chenango Valley Central School.
- Sales & Marketing Executives of the Southern Tier Award.** This is an award of \$200 to be given to a freshman at the end of his first year at Broome Tech who elects the Business-Marketing Option in his senior year. The recipient is to be chosen on the basis of need, character and scholastic ability. If the committee feels that two students meet these criteria, the award may be divided.
- Irving Schwab Memorial Scholarship.** A \$300 award to an applicant who can meet all entrance requirements, and who in addition has financial need and has shown outstanding ability as a basketball player.

- Soroptomist Club Scholarship.** An annual scholarship of \$200 is given to a student entering the Dental Hygiene program. The selection of the candidate is based upon financial need, quality of scholarship in high school, and aptitude as a dental hygienist.
- Wehle Electric-Wehle Electronic Scholarship.** An annual award of \$300 for a male student in the Electrical Technology program who has financial need.
- Ken Wilson Chevrolet Award.** A \$300 award to a student who meets all entrance requirements and has financial need and outstanding ability as a basketball player.
- Women's Auxiliary of the Broome County Dental Society.** A fund established for a deserving student in the Dental Hygiene curriculum who might need assistance to complete studies at the College.

## LOANS

Students enrolled at the College are eligible to borrow from either the New York Higher Education Assistance Corporation (also known as the Guaranteed Loan Program) or from funds made available under the National Defense Loan program. The interest rates are a low 3% to the student in either instance, the maximum annual amount that can be borrowed is \$1,000, and repayment doesn't have to begin until after graduation from either Broome Tech or any other college to which a student transfers. Repayment under both programs must start nine months after one completes or terminates his college education.

More information is available in the Financial Aids Office.

## WORK OPPORTUNITIES

### **College Work-Study Program**

The College Work-Study Program is available to all students who demonstrate financial need as defined by the Federal Government. Special emphasis is directed to students from low income families.

Work assignments vary within the College and include work in maintenance, laboratories and offices. The prevailing student wage for campus jobs is paid. During the normal school year, work assignments are limited to 15 hours per week and during the summer 40 hours per week.

Applications for the College Work-Study Program may be obtained from the Financial Aids Office.

### **Cooperative Work Program**

Students in the Electrical and Mechanical Technology curricula spend two terms in jobs related to their field of study. These are off-campus positions in industry. The College places the students in these jobs, and they are paid the prevailing wages for the work they do. Students earn about \$800 to \$1200 during each cooperative work period.

For more information on the Cooperative Work Program, see page 18.

### **Part-Time Jobs**

Part-time work is also available at times throughout the academic year, aside from the College Work-Study Program. These jobs are both on and off-campus. Students desiring work should consult the Financial Aids Office.

## **STUDENT CENTER**

The busiest and most versatile building on the Broome Tech campus is the Student Center. It houses the gymnasium, the College Cafeteria, Bookstore, Student Lounge, Faculty Dining Room and the Little Theater. This building is used by day and evening students of all curriculums.





## THE LIBRARY

A new \$1,500,000 Library Building was opened during the 1967-68 college year. The College Library occupies the top two floors of this three-story building, so that its capacity has been increased to 900 readers and 75,000 volumes.

Since 1947 the library has developed the most complete collection of technical works in the Southern Tier, consisting of about 27,000 books, pamphlets and government documents. Additions are currently emphasizing such areas as liberal arts, business and health sciences to reflect the College's broadened scope of curriculum offerings.

Extensive files of periodicals and journals, recordings and prints of well-known paintings are also included in the library's holdings.

Part of the library's purpose is to stimulate intellectual curiosity, to promote independent research, and to provide leisure-time reading facilities for students and faculty.

The library is open evenings during the college year and therefore is also available for evening division students. There are also library hours on Saturday mornings and Sundays in the late afternoon and evening.

## CO-CURRICULAR ACTIVITIES

The College recognizes the fact that student experiences outside the classroom are important in one's over-all development. For this reason the College supports an active co-curricular program as a complement to classroom studies. The variety of activities on the campus reflects the diversification of student interests and provides the opportunity for students to develop talents, leadership ability and a sense of social responsibility.

Co-curricular activities are guided by two faculty-student committees—the Student Activity Board of Control for the College's non-athletic program and the Athletic Board of Control for sports.

The Student Activity Board of Control consists of three faculty members and three students. It approves, recommends and supervises the policy of all student activities, except athletics.

The Athletic Board of Control is composed of three faculty members, the director of athletics and one student. It develops and recommends policy for intercollegiate and intramural athletic programs.





## **Student Council**

The Student Council, the governing body in student affairs, is the heart of the co-curricular activity program. The officers, elected from the student body, and the representatives from the various curriculums promote and coordinate the student activities. The Social Committee and Artist Series Committee are among the important Student Council committees, as they are responsible for the extensive social and cultural programs of the Council.

## **Music**

The College has a fine history of student-singing organizations, such as the College Choir for men and women, the Tech Tone Masters, as the male glee club was known, and the Madrigal Singers. These musical organizations have sung at the New York World's Fair, and joined with the Civic Theatre of Binghamton for the cooperative production of Broadway musicals. The Choir and Tech Tone Masters will perform this year. All students, as well as faculty and staff, are welcome to sing in these groups.

## **Honor Societies**

### **PHI THETA KAPPA**

In 1962 the Mu Eta chapter of Phi Theta Kappa was established at the College. Phi Theta Kappa is a national honor society at junior colleges, similar in purpose to Phi Beta Kappa at the four-year colleges and universities. Mu Eta chapter is open to freshmen and seniors who have achieved outstanding academic grades, been especially active in co-curricular participation, demonstrated outstanding qualities of leadership and responsibility, and made noteworthy contributions to the College.

### **SIGMA PHI ALPHA**

The national Dental Hygiene honor society, Sigma Phi Alpha, has a chapter at Broome Tech, the Upsilon chapter. Those senior dental hygiene students who rank highest in scholarship and character and who exhibit potential qualities for future growth and attainment are selected for membership.

## **Professional Society Affiliates**

Since exposure to organizations in their fields of study is considered of benefit to students, many curriculums have their own affiliates of national professional societies. Among these are:

ASTME, the American Society of Tool and Manufacturing Engineers, for Mechanical Technology students.

A collegiate chapter of the Administrative Management Society, mainly for Business students although all students are welcome.

Dental Hygiene Association, an affiliate of the American Dental Hygiene Association.

Broome Tech Chapter Future Secretaries Association, affiliated with the National Secretaries Association (International) Binghamton Chapter.

IEEE, the Institute of Electrical and Electronics Engineers, for Electrical Technology students.

In addition, some meetings of local professional societies are attended by students, as the American Chemical Society invites Chemical Technology students to its meetings. Some professional societies hold meetings on campus, too, and students are always welcome to attend. Thus students have the opportunity to become acquainted with professional people in their fields of study and to attend lectures and see films and demonstrations of new developments.



## Publications

*Tech Talk* is the campus newspaper and the *Citadel* is the College yearbook. *Tech Talk* is published semi-monthly and the *Citadel* is, of course, published just once a year. Positions on both publications are open to all students.

*Tech Talk's* purpose is to report news of the campus, student body and faculty. It also provides a place for students to express their ideas about campus activities and about events related to college life.

The *Citadel* provides a record, mostly pictorial, of the school year.

## Other Clubs

In addition to the co-curricular activities already listed, other organizations are active on campus, such as the Camera Club, Circle K, Newman Club, Broome Tech Players, Veterans Club, Civil Technology Association, the Cheerleaders, Pep Band and the Rifleaires. All are open to all students in good standing. Details on the purposes and requirements for membership in all clubs are available in the Student Handbook.

## **ATHLETICS**

### **Varsity Sports**

Broome Tech fields varsity teams in seven sports—basketball, soccer, baseball, cross-country, golf, tennis and wrestling—and has acquired an excellent reputation for team play and sportsmanship.

The basketball team has captured the regional junior college title in eight of the last 13 years and has won 476 games and lost 136. The baseball team has won two recent regional tournaments, and the cross-country, golf, tennis and soccer squads have also been regional powers in the past.

### **Intramural Sports**

All students may participate in intramural sports. Men's teams representing the various curriculums compete for the coveted President's Trophy, awarded annually to the one acquiring the most points in a variety of activities. League competition is conducted in flag football, basketball, volleyball, soccer and softball, while students also compete in individual sports such as golf, badminton, archery, tennis, cross-country and bowling.

Archery, skiing and co-educational bowling clubs offer additional opportunity for participation in recreational activities, although they do not count in President's Trophy competition.

### **Women's Sports**

The College also has a varied sports program for women students. In addition to the Physical Education classes, there are intramural competition and All-Sports Days.

Intramurals are contested in volleyball, badminton, tennis, archery, basketball, softball, bowling and Hurricane 9 (a modified form of touch football for girls). A Dean's Trophy is awarded to the winning team, similar to the President's Trophy for the men's intramurals champion.

The All-Sports Days consist of competition in varied sports against women's teams from other colleges, both at home and away.

## **ALUMNI**

Graduates who are working in the area are urged to take advanced courses offered in the Division of Continuing Education's evening program.

### **Transcripts**

Each graduate is entitled to two transcripts of his work completed at the College. One dollar is charged for each additional transcript.

### **Alumni Association**

All graduates of the College now automatically become paid-up lifetime members of the Broome Tech Alumni Association, which is legally a division of the Faculty-Student Association so that it too is organized on a non-profit corporate basis.

The association has its own officers, board of directors and paid executive secretary, and its primary purpose is to provide a link between the College and its graduates. A quarterly printed Alumni Newsletter helps to accomplish this objective by providing alumni with news of the College as well as information about other graduates.

The Alumni Association actively supports the College's scholarship program and conducts programs for its members throughout the year, such as the annual Alumni Dinner-Dance.



# HONOR AWARDS

**American Chemical Society (Binghamton Section) Award** of \$50 to the outstanding senior in chemistry.

**American Society for Testing and Materials (Binghamton Chapter) Award** of a one-year membership in the society to a Mechanical or Civil Technology senior who has shown superior scholastic ability and an interest in testing or in materials.

**American Society of Tool and Manufacturing Engineers (ASTME) Award** of the Tool Engineers Handbook to a senior in the student ASTME Chapter who has contributed outstanding service.

**Broome County Chamber of Commerce Award** of an engraved certificate to two seniors (a man and a woman) for leadership in co-curricular activities and for satisfactory academic achievement.

**Broome County Medical Society Award** of a \$200 scholarship to a freshman student in the Medical Office Assistant program who is a Broome County resident and is selected by the faculty for aptitude, initiative and scholarship.

**Broome County Women's Republican Award** of \$25 to an outstanding student in history.

**Collegiate Administrative Management Society Chapter Award** of five inscribed pewter bowls to the outstanding student, academically, in each of the five options of the Business Division.

**Colonial TV Award** of a \$25 gift certificate to an Electrical Technology senior who has shown outstanding ability in laboratory work.

**French Embassy medals** to the four best French language students. Donated by the French Embassy, these are called the Lafayette Medal, Jean Racine Medal, Alfred Jarry Medal and Diane de Poitiers Medal.

**U. S. Greene Mathematics Award** of \$50 to a senior for showing a high degree of ability and progress in mathematics.

**Institute of Electrical and Electronics Engineers (IEEE) Awards:**

1—An IEEE certificate from the national IEEE office to an Electrical Technology senior who has contributed most to the student IEEE chapter.

2—\$50 from the Binghamton Section of IEEE to the Electrical Technology senior who has shown leadership and outstanding ability in the IEEE organization. The student must be in the top quarter of his graduating class.

**International Material Management Society (Southern Tier Chapter) Award** of \$75 to a to a Mechanical Technology senior who has demonstrated an interest in material handling, mechanical engineering or industrial engineering and who plans to make a career of one of these fields.

**Ladies Auxiliary of the Broome County Area Chapter of the New York State Society of Professional Engineers Award** of a \$100 scholarship to an Engineering Science senior who has shown a high degree of engineering ability. Financial need is a factor in selecting this recipient.

**Mallinckrodt Chemical Works Award** of an engraved silver platter to the academically outstanding freshman in the X-ray Technology curriculum.

**Sales and Marketing Executive Club of the Southern Tier Award** of a \$200 scholarship for one person or \$100 each to two freshman students in the marketing program on the basis of need, academic performance and an essay.

**Stevenson Medal**, given by the New York State Dental Society, to the Dental Hygiene student who possesses in the highest degree the qualities considered necessary for success in this work, such as theory, technique and personality.

**Triple Cities Radiologic Technologists Society Award** of the three-volume text "Atlas of Roentgenographic Positions" to an X-ray Technology student for special achievements.

**Upsilon Chapter of Sigma Phi Alpha (National Dental Hygiene Honor Society) Award** of membership in the chapter. Limited to the top 10 percent of the Dental Hygiene graduates who rank highest in scholarship and character.

**William E. Wilson Memorial Award** to a Civil Technology senior for academic achievement and citizenship.

## **JOB PLACEMENT**

Many companies send representatives to the campus each spring to interview seniors about jobs immediately after graduation. This practice has grown to the point where between 50 and 75 concerns conducted job interviews in each of the last few years.

Leading national corporations were among those interested in Broome Tech graduates, as well as many local companies. The list included such major area employers as International Business Machines, New York State Electric & Gas Corp., Link Division of Singer-General Precision, Inc., GAF and practically all the banks in Broome County.

Such firms as Eastman Kodak, Xerox, DuPont, Argonne Laboratories, American Can Co., Dow Chemical and Corning Glass represented the national scene.

The job interviews are especially directed toward students in the occupationally-oriented Business program and the Electrical, Mechanical, Civil and Chemical Technology curriculums.

In cooperation with the department chairmen, the Student Personnel Office coordinates permanent placement, including employment listings and appointments for interviews.

## **CONVOCATIONS**

Speakers in a diversity of fields are brought to the campus during the school year as part of the College's convocation program. These convocations are considered a phase of the academic curriculum, although they are scheduled apart from the regular classroom program.

Such nationally known figures as Dr. Henry Kissinger, President Nixon's top advisor for foreign policy; consumer crusader Ralph Nader; James Farmer, former director of CORE who was named an assistant to U.S. Secretary of Health, Education and Welfare James Finch; syndicated advice columnist Ann Landers have spoken at convocations.

Other noted speakers who have been here for convocations include television writer Rod Serling, former Congressman Walter Judd, the late Norman Thomas, James Meredith, and author Vance Packard.

# **CURRICULUMS of the COLLEGE**

## **OCCUPATIONAL PROGRAMS**

The following curriculums are designed to prepare graduates for immediate employment:

### **BUSINESS**

**Accounting**  
**Marketing Management**  
**Executive Secretarial**  
**Engineering Secretarial**

### **ENGINEERING TECHNOLOGY**

**Chemical Technology**  
**Civil Technology**  
**Electrical Technology**  
**Mechanical Technology**

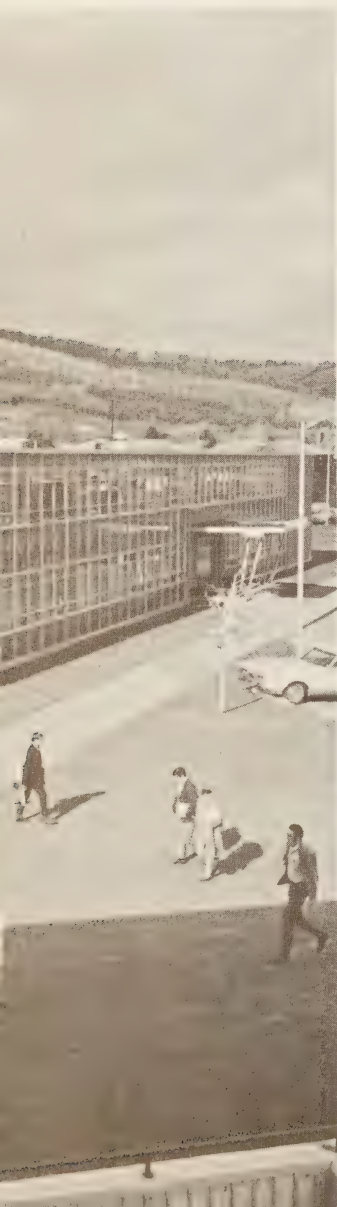
### **MEDICALLY-RELATED**

**Dental Hygiene**  
**Environmental Health Technology**  
**Medical Laboratory Technology**  
**Medical Office Assistant**  
**Medical Record Technology**  
**Nursing**  
**X-Ray Technology**

## **UNIVERSITY-PARALLEL PROGRAMS**

These curriculums are designed to prepare graduates for transfer to four-year colleges and universities at the third, or junior, year:

**Business Administration**  
**Engineering Science**  
**Liberal Arts and Sciences**





# **BUSINESS**

The Business Division offers courses of study in five different options. These are Engineering Secretarial and Executive Secretarial, Accounting, Marketing Management, and Business Administration. The first four are designed to prepare graduates for immediate employment, while the business administration option is for students planning to continue their education at a four-year college or university.

It is possible to transfer from all programs. But because each student's transfer credits are evaluated by the four-year institution, the number of credits accepted can vary. Any student planning to transfer should maintain a minimum of 2.5 grade point average.

Administratively, two departments cover these five options. Accounting, Marketing Management, and Business Administration are in the Administrative Management Department; the Engineering Secretarial and Executive Secretarial programs comprise the Secretarial Sciences Department.

These programs were planned with the assistance of businessmen, accountants, administrative managers, comptrollers, auditors, sales managers, engineers and secretaries.

Employment in business and industry, as well as management training programs offered by banks, chain stores and insurance companies, provide some of the best opportunities for a graduate of the accounting and marketing management options.

## **OCCUPATIONAL PROGRAMS**

### **Engineering Secretary**

Graduates of this option can obtain immediate employment as stenographers, secretaries or private secretaries. Students in this option study science and engineering terminology in addition to their business courses. Therefore, they can understand the specialized language of engineering and are well prepared to work on engineering reports, records and correspondence.

### **Executive Secretary**

Graduates of this option can obtain immediate employment as stenographers, secretaries or private secretaries. Students in this option may elect courses from other fields of study in the College consistent with their interests and vocational goals. Therefore, they can understand the specialized language used in the professions, as well as in government and business firms.

### **Accounting**

Students taking this option receive their training in such basic areas as cost accounting, internal auditing, machine accounting and tax accounting. Graduates have successfully taken positions in banks, industrial firms, public accounting and private business.

### **Marketing Management**

Training is given in sales, advertising, management and research. Employment is generally found in sales of services, equipment, insurance, products at the wholesale level, and management training positions.

## **TRANSFER PROGRAM**

### **Business Administration**

This option is designed specifically to prepare graduates to continue their business studies at a four-year college or university. While offering maximum transfer potential toward a bachelor's degree in accounting or business administration, it still gives students preparation for employment if they decide to work instead of seeking their baccalaureate degrees.

# ADMINISTRATIVE MANAGEMENT DEPARTMENT

## Business Administration • Accounting • Marketing

These 3 options have the same first year of study.

		Hours Per Week		
Term 1	1st YEAR	Class	Lab	Credits
BU 101	Accounting .....	4	0	4
BU 145	Business Law .....	3	0	3
BU 160	*Typewriting or a Liberal Arts elective .....	0-3	5-0	2-3
LA 255	Economics .....	3	0	3
LA 801	English .....	3	0	3
	**Mathematics or alternate course .....	3	0	3
Term 2		16-19	5-0	18-19
BU 102	Accounting .....	4	0	4
BU 141	Business Mathematics .....	3	0	3
BU 146	Business Law .....	3	0	3
BU 151	Business English .....	3	0	3
LA 256	Economics .....	3	0	3
LA 802	English .....	3	0	3
Term 3		19	0	19
BU 103	Accounting .....	4	0	4
BU 142	***Business Statistics or MA 101 Mathematics ..	3	0	3
BU 130	Introduction to Electronic Data Processing ...	3	0	3
LA 257	Economics .....	3	0	3
LA 803	English .....	3	0	3
	***Physical Science .....	3-2	2-2	4-3
		19-18	2-2	20-19

\*If a student has satisfactorily completed a Regents unit of Typewriting with a grade of 65% or equivalent, a Liberal Arts course may be substituted.

\*\*MA 100 Mathematics for students who did poorly in Elementary Algebra or who have been away from it more than four years. MA 101 Mathematics for students who have passed Elementary Algebra or MA 100 Mathematics. An alternate course chosen by the department for students who have passed Intermediate Algebra or Math 11 in secondary school, or MA 101 Mathematics.

\*\*\*Students who choose the Business Administration option must take PH 113 Physical Science. If the student took MA 100 Mathematics, he must take MA 101 Mathematics at this time. This will be offered as an alternate to BU 142 Business Statistics. Accounting and Marketing Management students will take BU 142 Business Statistics and PH 101 Physical Science.

		Business Administration Option 2nd YEAR		
Term 4				
BU 204	Intermediate Accounting .....	4	0	4
BU 207	Cost Acctg. or LA 236 Lit. of Western World .	4-3	0-0	4-3
LA 145	Development of Western Civilization .....	3	0	3
MA 110	Fundamentals of Mathematics .....	3	0	3
PH 114	Physical Science .....	3	2	4
Term 5		17-16	2	18-17
BU 205	Intermediate Accounting .....	4	0	4
BU 208	Cost Acctg. or LA 237 Lit. of Western World	4-3	0-0	4-3
LA 146	Development of Western Civilization .....	3	0	3
MA 111	Fundamentals of Mathematics .....	3	0	3
PH 115	Physical Science .....	3	2	4
Term 6		17-16	2	18-17
BU 206	Intermediate Accounting .....	4	0	4
BU 210	Cost Acctg. or LA 238 Lit. of Western World .	4-3	0-0	4-3
LA 147	Development of Western Civilization .....	3	0	3
LA 804	Effective Speaking .....	3	0	3
MA 112	Fundamentals of Mathematics .....	3	0	3
		17-16	0	17-16

## Accounting Option

### 2nd YEAR

		Hours Per Week		
		Class	Lab	Credits
<b>Term 4</b>				
BU 204	Intermediate Accounting .....	4	0	4
BU 207	Cost Accounting .....	4	0	4
BU 230	Business Data Processing .....	2	2	3
BU 251	Office Management .....	3	0	3
BU 252	Business Report Writing .....	3	0	3
		16	2	17
<b>Term 5</b>				
BU 205	Intermediate Accounting .....	4	0	4
BU 208	Cost Accounting .....	4	0	4
BU 231	Business Data Processing .....	2	2	3
BU 253	Personnel Administration .....	3	0	3
LA 810	Psychology .....	3	0	3
		16	2	17
<b>Term 6</b>				
BU 206	Intermediate Accounting .....	4	0	4
BU 210	Cost Accounting .....	4	0	4
BU 223	Internal Auditing .....	4	0	4
BU 241	Computer Programming—RPG .....	2	2	3
LA 804	Effective Speaking .....	3	0	3
		17	2	18

## Marketing Management Option

### 2nd YEAR

<b>Term 4</b>				
BU 252	Business Report Writing .....	3	0	3
BU 253	Personnel Administration .....	3	0	3
BU 290	Salesmanship .....	3	0	3
BU 292	Marketing .....	3	0	3
LA 804	Effective Speaking .....	3	0	3
		15	0	15
<b>Term 5</b>				
BU 291	Sales Management .....	3	0	3
BU 293	Advertising .....	4	0	4
BU 296	Credit .....	3	0	3
BU 298	Marketing .....	3	0	3
LA 810	Psychology .....	3	0	3
		16	0	16
<b>Term 6</b>				
BU 251	Office Management .....	3	0	3
BU 294	Advertising .....	4	0	4
BU 295	Market Research .....	3	0	3
BU 297	Marketing Management .....	3	0	3
LA 830	Sociology .....	3	0	3
		16	0	16



# SECRETARIAL SCIENCES DEPARTMENT

## Engineering Secretary                      Executive Secretary

These 2 options have the same first year of study.

### 1st YEAR

		Hours Per Week		
		Class	Lab	Credits
<b>Term 1</b>				
BU 101	Accounting .....	4	0	4
BU 141	Business Mathematics .....	3	0	3
BU 161	*Typewriting or Alternate .....	0-3	5-0	2-3
BU 164	**Shorthand or Alternate .....	2-3	3-0	3
LA 801	English .....	3	0	3
MA 105	Mathematics .....	3	0	3
		<hr/> 15-19	<hr/> 8-0	<hr/> 18-19
<b>Term 2</b>				
BU 102	Accounting .....	4	0	4
BU 162	Typewriting .....	0	5	2
BU 165	Shorthand .....	2	3	3
BU 167	Transcription .....	2	3	3
LA 802	English .....	3	0	3
PH 101	Physical Science .....	2	2	3
		<hr/> 13	<hr/> 13	<hr/> 18
<b>Term 3</b>				
BU 104	Accounting .....	4	0	4
BU 163	Typewriting .....	2	3	3
BU 166	Shorthand .....	2	3	3
LA 803	English .....	3	0	3
LA 804	Effective Speaking (Executive Secretary) ....	3	0	3
		or		
PH 102	Physical Science (Engineering Secretary) ....	2	2	3
LA 810	Psychology .....	3	0	3
		<hr/> 17-16	<hr/> 6-8	<hr/> 19

\*If a student has earned a Regents unit in Typewriting of 80% or better, an alternate course chosen by the department will be assigned.

\*\*If a student has earned a Regents unit in Shorthand of 80% or better, an alternate course chosen by the department will be assigned.

## Engineering Secretary Option

2nd YEAR			Hours Per Week		
Term 4			Class	Lab	Credits
BU 151	Business English .....	3	0	3	
BU 230	Data Processing .....	2	2	3	
BU 253	Personnel Administration .....	3	0	3	
BU 260	Engineering Shorthand .....	2	3	3	
CH 104	Chemistry .....	3	2	4	
MT 101	Engineering Drawing .....	0	3	1	
			13	10	17
Term 5					
BU 145	Business Law .....	3	0	3	
BU 261	Engineering Shorthand .....	2	3	3	
BU 263	Technical Typewriting .....	2	3	3	
BU 274	Office Practice .....	2	4	4	
MT 129	Survey of Engineering Laboratories .....	1	3	2	
LA 804	Effective Speaking .....	3	0	3	
			13	13	18
Term 6					
BU 146	Business Law .....	3	0	3	
BU 275	Office Practice .....	2	4	4	
BU 280	Speed Shorthand .....	2	3	3	
LA 820	Economics .....	3	0	3	
LA 840	Introduction to Philosophy .....	3	0	3	
	Liberal Arts Elective .....	3	0	3	
			16	7	19

## Executive Secretary Option

		2nd YEAR					
Term 4							
BU 151	Business English .....	3	0	3			
BU 253	Personnel Administration .....	3	0	3			
BU 270	Executive Shorthand .....	2	3	3			
LA 193	Philosophy or a Liberal Arts elective .....	3	0	3			
LA 236	Literature of Western World or Language ...	3-4	0-1	3-4			
LA 255	Economics .....	3	0	3			
		17-18	3-4	18-19			
Term 5							
BU 145	Business Law .....	3	0	3			
BU 271	Executive Shorthand .....	2	3	3			
BU 274	Office Practice .....	2	4	4			
LA 194	Philosophy or LA 840 Introduction to Philosophy .....	3	0	3			
LA 237	Literature of Western World or Language ...	3-4	0-1	3-4			
LA 256	Economics .....	3	0	3			
		16-17	7-8	19-20			
Term 6							
BU 146	Business Law .....	3	0	3			
BU 275	Office Practice .....	2	4	4			
BU 280	Speed Shorthand .....	2	3	3			
LA 195	Philosophy or BU 230 Data Processing .....	3	0	3			
LA 238	Literature of Western World or Language ....	3-4	0-1	3-4			
LA 257	Economics .....	3	0	3			
		16-17	7-8	19-20			

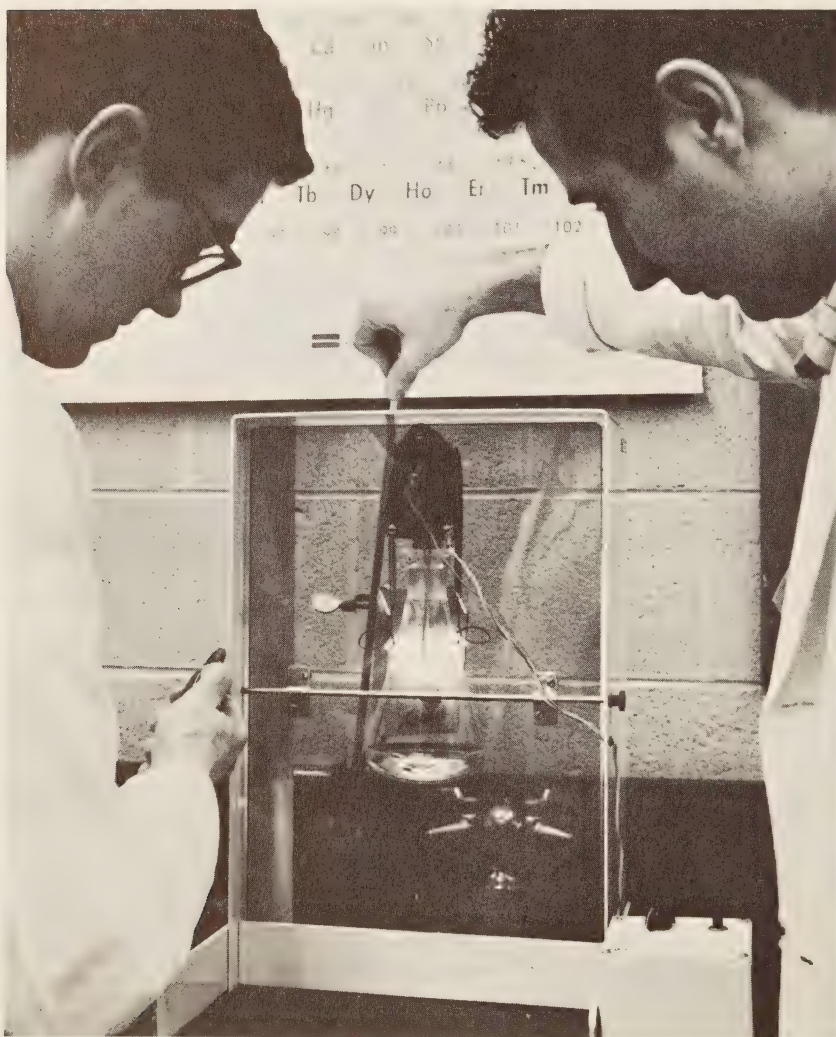
## CHEMICAL TECHNOLOGY

The Chemical Technology program is designed to prepare both men and women for industrial positions in chemistry, chemical engineering and allied occupations. Industrial positions are in the areas of research, development, analytical chemistry, pilot plant, production supervision, technical writing and sales.

Graduates are employed by both private industry and government agencies throughout the nation, and each year the demand for graduates continues to exceed the supply.

This program's primary emphasis is toward the occupational opportunities in this field. But some students each year have successfully transferred to the third year of a four-year college or university.

This is an ECPD accredited Engineering Technology curriculum. ECPD is the Engineers Council for Professional Development.





# Chemical Technology

		Hours Per Week		
		Class	Lab	Credits
<b>Term 1</b>		<b>1st Year</b>		
CH 110	Chemistry .....	4	3	5
AD 100	Orientation .....	1	0	0
LA 801	English .....	3	0	3
MA 140	*College Algebra and Trigonometry .....	4	0	4
MT 104	Engineering Drawing .....	0	3	1
PH 140	Physics .....	3	2	4
		14	8	17
<b>Term 2</b>				
CH 111	Chemistry .....	4	3	5
LA 280	Sociology .....	3	0	3
LA 802	English .....	3	0	3
MA 141	*Analytic Geometry and Calculus .....	3	0	3
PH 141	Physics .....	3	2	4
		16	5	18
<b>Term 3</b>				
CH 112	Chemistry .....	4	6	6
AD 120	Computer Programming .....	2	2	3
LA 803	English .....	3	0	3
MA 142	*Analytic Geometry and Calculus .....	3	0	3
PH 142	Physics .....	3	2	4
		15	10	19
<b>Term 4</b>		<b>2nd YEAR</b>		
CH 241	Quantitative Analysis .....	3	6	5
CH 251	Organic Chemistry .....	3	6	5
CH 261	Stoichiometry .....	4	0	4
		or		
BI 101	**Biology .....	3	3	4
MA 241	Analytic Geometry and Calculus .....	3	0	3
		or		
LA 820	Economics .....	3	0	3
		13-12	12-15	17
<b>Term 5</b>				
CH 242	Quantitative Analysis .....	3	6	5
CH 252	Organic Chemistry .....	3	6	5
CH 262	Unit Operations .....	3	3	4
		or		
BI 102	**Biology .....	3	3	4
LA 281	Sociology .....	3	0	3
		12	15	17
<b>Term 6</b>				
CH 243	Instrumental Methods of Analysis .....	3	6	5
CH 253	Organic Chemistry .....	3	6	5
CH 263	Unit Operations .....	3	6	5
		or		
BI 103	**Biology .....	3	3	4
LA 282	Sociology .....	3	0	3
		12	18-15	18-17

\*Students whose mathematics background is deemed adequate by the Admissions Office may start their mathematics sequence with MA 141. They would then take MA 142 and MA 240 in the second and third terms.

\*\*A limited number of students may take BI 101, 102, 103 Biology in place of CH 261, 262, 263.



## **CIVIL TECHNOLOGY**

The construction industry, considering all related goods and services such as manufacturing and transportation, is the largest industry in the country. The unparalleled activity in construction has pointed up a severe shortage of technical personnel in this field.

This shortage has been made more acute by activation of new multibillion dollar state and federal programs in highway and clean water conservation, by the erection of new educational and industrial facilities, and by the continued activity in home building. Civil Technology has been designed to help alleviate this shortage.

Graduates of this program are engineering technicians and are qualified to work as assistants to professional and supervisory persons such as engineers, architects, construction superintendents, surveyors and contractors.

Many openings exist in the federal, state and local governments. Other fields which attract graduates are sales of building materials and construction equipment, purchasing, testing of construction materials, drafting, estimating, specification writing, and inspection.

This is an ECPD accredited Engineering Technology curriculum. ECPD is the Engineers Council for Professional Development.

# Civil Technology

		Hours Per Week		
Term 1	1st YEAR	Class	Lab	Credits
AD 100	Orientation .....	1	0	0
CH 104	†Chemistry .....	3	2	4
LA 801	English .....	3	0	3
MA 140	#College Algebra & Trigonometry .....	4	0	4
MT 110	††Engineering Drawing .....	0	3	1
MT 130	Manufacturing Processes .....	2	2	3
PH 140	Physics .....	3	2	4
<b>Term 2</b>		16	9	19
CT 110	Architectural Drawing .....	0	3	1
CT 119	Plain Concrete .....	2	3	3
LA 802	English .....	3	0	3
MA 141	#Analytic Geometry & Calculus .....	3	0	3
MT 155	Applied Mechanics .....	3	0	3
PH 141	Physics .....	3	2	4
<b>Term 3</b>		14	8	17
CT 140	Surveying .....	3	6	5
CT 153	Strength of Materials .....	3	3	4
CT 211	Architectural Drawing .....	0	3	1
ET 141	Electricity .....	2	3	3
LA 803	English .....	3	0	3
MA 142	#Analytic Geometry & Calculus .....	3	0	3
		14	15	19

†Students who have passed a high school Chemistry Regents with 85% or better or GS 140 Chemistry with a C or better will not be required to take CH 104 Chemistry. Another course may be substituted by the department.

††Students who have passed GS 132 Engineering Drawing with a C or better will not be required to take MT 110 Engineering Drawing.

#Students whose mathematics background is deemed adequate by the Admissions Office may start their mathematics sequence with MA 141. They would then take MA 142 and MA 240 in the second and third terms.

Term 4	2nd YEAR			
CT 141	Surveying .....	2	6	4
CT 212	Architectural Drawing .....	0	3	1
CT 254	Strength of Materials .....	3	0	3
AD 120	Computer Programming .....	2	3	3
LA 830	Sociology .....	3	0	3
	*Elective .....	0-3	0-3	0-4
<b>Term 5</b>		10-13	12-15	14-18
CT 220	Reinforced Concrete Design .....	3	3	4
CT 250	Estimating & Construction Planning .....	3	3	4
CT 283	Route Surveying & Highway Design .....	3	3	4
LA 810	Psychology .....	3	0	3
	**Elective .....	0-3	0-3	0-3
<b>Term 6</b>		12-15	9-12	15-18
CT 221	Structural Steel Design .....	3	3	4
CT 230	Building Design .....	3	3	4
CT 270	Soil Mechanics .....	3	3	4
LA 820	Economics .....	3	0	3
	***Elective .....	0-3	0-3	0-4
		12-15	9-12	15-19

\*CT 260 Hydraulics or MA 240 Analytic Geometry and Calculus.

\*\*CT 174 Environmental Sanitation or MA 241 Analytic Geometry and Calculus.

\*\*\*CT 273 Environmental Sanitation or MA 242 Analytic Geometry and Calculus.



## DENTAL HYGIENE

Dental hygienists are in great demand in this highly respected profession. Their services are performed in private dental practices, school systems, hospitals, industry and institutional dental clinics. Also in research programs, schools of dental hygiene, public health agencies, the Peace Corps and on the ship S.S. Hope. Regardless of the type of employment, one of the most important activities is that of constantly being a dental health educator.

Students learn to perform clinical, educational and assisting duties in a department that has the most modern equipment. The dental hygienist, who always works under the supervision of a dentist, is the only member of the auxiliary group in the dental profession who is licensed to perform services directly in the mouth of a patient; therefore, good manual dexterity is necessary. Sincere interest in working with people, good health, pleasing personality and good moral character are also important qualifications.

Dental hygiene duties, in compliance with respective state laws, include (a) the removal of deposits and stains on the teeth, (b) the application of fluoride solutions to the teeth, (c) individual and group dental health instruction, (d) exposing, processing and mounting of dental X-ray films, and (e) assisting the dentist at the dental chair and in the laboratory.

All dental hygienists must pass a licensing examination (written and practical) in the state in which they wish to practice. A written National Board Examination is currently accepted by 46 states, the District of Columbia and the Virgin Islands.

Graduates of Broome Tech's Dental Hygiene curriculum may continue to study for a Bachelor of Science Degree in Health Education, for which a formal arrangement has been made with the State University College at Cortland, New York. Credits are also acceptable for transfer to other degree-granting colleges in the country.

The Dental Hygiene Department is equipped to handle limited numbers of students, so that applications should be submitted to the College at the beginning of the senior year of high school. It is also recommended that applicants take the Dental Hygiene Aptitude Test.

The curriculum is fully accredited by the Council on Dental Education of the American Dental Association.



# Dental Hygiene

Term 1		1st YEAR	Hours Per Week		
			Class	Lab	Credits
DH 100		Dental Hygiene and Ethics .....	2	0	2
DH 140		Dental Anatomy .....	2	2	3
BI 111		First Aid .....	1	0	1
BI 171		Anatomy and Physiology .....	3	2	4
CH 101		Chemistry .....	3	2	4
LA 801		English .....	3	0	3
			14	6	17
Term 2					
DH 101		Dental Manikin Practice .....	1	4	3
DH 121		Hygiene .....	2	0	2
DH 141		Dental Anatomy .....	2	2	3
BI 172		Anatomy and Physiology .....	3	2	4
CH 102		Chemistry .....	3	2	4
LA 802		English .....	3	0	3
			14	10	19
Term 3					
DH 103		Clinical Dental Hygiene .....	1	3	2
DH 158		Dental Office Practice .....	2	2	3
DH 283		Dental Health Education .....	3	0	3
BI 159		Microbiology .....	3	4	5
BI 176		Dental Histology .....	3	2	4
LA 803		English .....	3	0	3
			15	11	20
Term 4					
2nd YEAR					
DH 204		Clinical Dental Hygiene .....	1	12	4
DH 244		Preventive Dentistry .....	3	0	3
DH 251		Dental Radiography .....	1	2	2
DH 254		General Pathology .....	2	0	2
DH 284		Dental Pharmacology .....	3	0	3
LA 810		Psychology .....	3	0	3
			13	14	17
Term 5					
DH 205		Clinical Dental Hygiene .....	1	12	4
DH 252		Clinical Dental Radiography .....	0	2	1
DH 255		Oral Pathology .....	2	0	2
DH 260		Dental Laboratory Practice .....	2	2	3
DH 261		Nutrition .....	3	0	3
DH 267		Anesthesia .....	2	0	2
DH 287		Public Health .....	2	0	2
			12	16	17
Term 6					
DH 206		Clinical Dental Hygiene .....	1	12	4
DH 253		Clinical Dental Radiography .....	0	2	1
DH 268		Special Dental Practice .....	3	0	3
LA 804		Effective Speaking .....	3	0	3
LA 820		Economics .....	3	0	3
LA 830		Sociology .....	3	0	3
BU 160		Typewriting (elective) .....	0	5	2
			13	14-19	17-19

## ELECTRICAL TECHNOLOGY

Few people are unaware of what an important part electricity plays in our daily lives, in conveniences like radio, television, lighting and innumerable kitchen appliances.

But electricity is also one of the cornerstones upon which space exploration and our national defense are built. The amazing development of radar, electronics and solid state hardware is based on electricity.

The recent rapid advances in electronics and related electrical fields have created a tremendous need for engineers, engineering technicians and specialists to meet the needs of national defense and the scientific economy and life of the future.

Two-year technical colleges, like Broome Tech, have become increasingly important in preparing better trained men for work in the electrical field. These colleges train men and women to do highly specialized technical work in half the time of a four-year college. Although few realize it, there is an excellent place for women in the electrical field.

Job opportunities are in such areas as electrical design drafting, technical sales, electronic computers, sonar and guided missiles. Graduates can also find employment in power generation and distribution, communications and the design and evaluation of electrical equipment.

Some of the companies that have hired Broome Tech Electrical Technology graduates in recent years are General Electric, Westinghouse, IBM, Bell Telephone, the Argonne Laboratories of the University of Chicago and New York State Electric and Gas Corp.

This is an ECPD accredited Engineering Technology curriculum. ECPD is the Engineers Council for Professional Development.





# Electrical Technology

Term 1	1st YEAR	Hours Per Week		
		Class	Lab	Credits
ET 101	Manufacturing Processes .....	1	3	2
ET 104	Industrial Safety and First Aid .....	2	0	2
ET 110	Physics (Fundamentals for Electricity) .....	4	3	5
ET 130	Engineering Drawing .....	0	3	1
AD 100	Orientation .....	1	0	0
LA 801	English .....	3	0	3
MA 140	†College Algebra and Trigonometry .....	4	0	4
<b>Term 2</b>		14	9	17
ET 102	Electrical Construction and Maintenance ....	1	3	2
ET 111	Physics (Electricity and Magnetism) .....	4	3	5
ET 112	Semiconductor Fundamentals .....	4	0	4
ET 131	Engineering Drawing .....	0	3	1
LA 802	English .....	3	0	3
MA 141	†Analytic Geometry and Calculus .....	3	0	3
<b>Term 3</b>		15	9	18
ET 103	Electrical Construction and Maintenance ....	0	3	1
ET 120	Electrical Circuits .....	4	3	5
ET 250	Electronics .....	4	3	5
AD 120	Fundamentals of Computer Programming ....	2	2	3
LA 803	English .....	3	0	3
MA 142	†Analytic Geometry and Calculus .....	3	0	3
		16	11	20
Term 4	2nd YEAR			
ET 223	Network Analysis .....	4	0	4
ET 230	Electrical Design .....	0	3	1
ET 240	Electrical Machines .....	4	3	5
ET 251	Electronics .....	4	3	5
ET 262	Industrial Relations .....	3	0	3
	*Required Elective .....	3	0	3
<b>Term 5</b>		18	9	21
ET 231	Electrical Design .....	0	3	1
ET 241	Electrical Machines .....	4	3	5
ET 252	Electronics .....	4	3	5
ET 261	Organization and Management .....	3	0	3
LA 810	Psychology .....	3	0	3
	**Required Elective .....	3	0	3
<b>Term 6</b>		17	9	20
ET 232	Electrical Design .....	0	3	1
ET 242	Automatic Controls .....	4	3	5
ET 253	Electronics .....	4	3	5
LA 820	Economics .....	3	0	3
LA 830	Sociology .....	3	0	3
		14	9	17

†Students whose mathematics background is deemed adequate by the Admissions Office may start their mathematics sequence with MA 141. They would then take MA 142 and MA 240 in the second and third terms.

\*MA 240 Analytic Geometry and Calculus or ET 263 Engineering Economics.

\*\*MA 240 or MA 241 Analytic Geometry and Calculus or ET 263 Engineering Economics or ET 257 Introduction to System Logic.

## 2 Quarters of Cooperative Work Required for Graduation

See page 18 for explanation of Cooperative Work Program

## ENGINEERING SCIENCE

The level of work covered in the Engineering Science curriculum is primarily designed to prepare graduates to continue their studies in the engineering field in four-year colleges and universities. But there are also employment opportunities for qualified graduates.

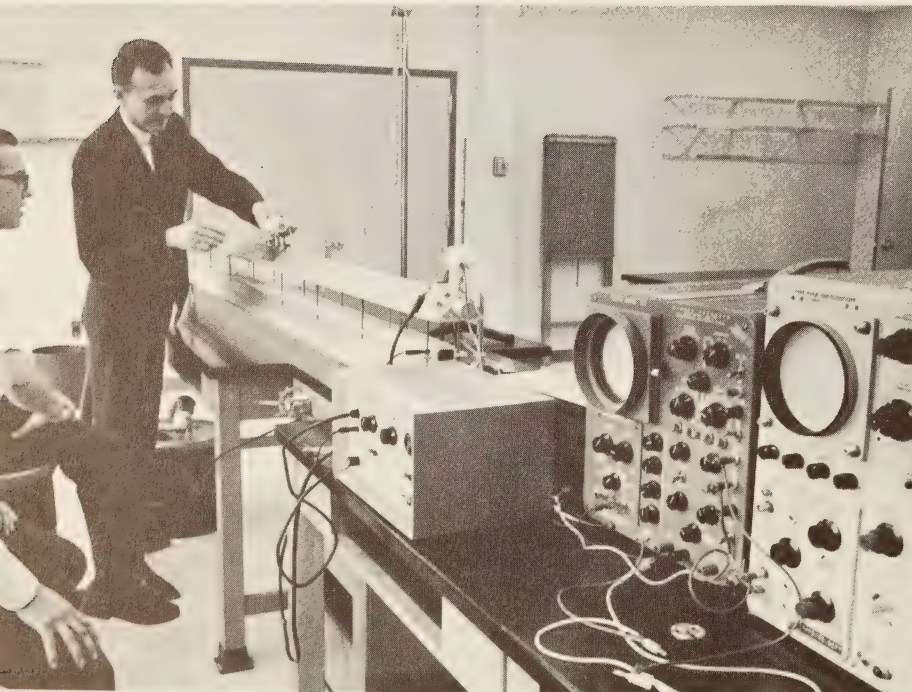
The emphasis in this program is on mathematics and physics, so that graduates can transfer to four-year schools into the junior year in physics, engineering and mathematics.

Students have recently transferred to engineering schools at such colleges and universities as Rensselaer Polytechnic Institute, Syracuse, Clarkson, New York University and State University at Buffalo.

Some of the job opportunities for those who prefer to seek immediate employment lie in the engineering technician field, for example as assistants to engineers in research and development, and positions involving the application of mathematics.

In order for a high school graduate to qualify for admission to the Engineering Science curriculum, he or she must have shown high academic potential on the admission tests, and demonstrated superior ability in science and mathematics in high school.

Students entering Broome Tech who wish to continue studying for their bachelors' degrees in engineering, applied mathematics or physics will find this the most appropriate course of study.



# Engineering Science

## 1st YEAR

		Hours Per Week		
Term 1		Class	Lab	Credits
CH 135	Chemistry .....	3	3	4
LA 130	English Composition .....	3	0	3
MA 170	Analytic Geometry and Calculus .....	4	0	4
PH 170	Physics (Mechanics) .....	3	3	4
MT 103	Engineering Drawing .....	0	6	2
		13	12	17

Term 2				
CH 136	Chemistry .....	3	3	4
LA 131	English Composition .....	3	0	3
MA 171	Analytic Geometry and Calculus .....	4	0	4
PH 171	Physics (Mechanics and Heat) .....	3	3	4
MT 112	Descriptive Geometry .....	1	2	2
		14	8	17

Term 3				
CH 137	Chemistry .....	3	3	4
LA 132	English Composition .....	3	0	3
MA 172	Analytic Geometry and Calculus .....	4	0	4
PH 172	Physics (Electricity and Magnetism) .....	3	3	4
AD 111	Computer Programming and Numerical Analysis .....	2	2	3
		15	8	18

## 2nd YEAR

Term 4				
LA 255	Economics .....	3	0	3
MA 270	Analytic Geometry and Calculus .....	4	0	4
PH 270	Physics (Light and Sound) .....	3	3	4
PH 192	Statics .....	4	0	4
MT 270	Engineering Materials .....	3	0	3
		17	3	18

Term 5				
LA 256	Economics .....	3	0	3
MA 271	Differential Equations .....	3	0	3
PH 271	Physics (Atomic) .....	3	3	4
PH 290	Dynamics .....	4	0	4
PH 210	Electrical Circuits .....	3	3	4
		16	6	18

Term 6				
LA 257	Economics .....	3	0	3
	or		or	
PH 280	Astronomy .....	3	3	4
MA 272	Differential Equations .....	3	0	3
PH 272	Physics (Nuclear) .....	3	3	4
PH 211	Electrical Circuits .....	3	3	4
MT 271	Engineering Materials .....	3	0	3
		15	6-9	17-18





## ENVIRONMENTAL HEALTH TECHNOLOGY

Environmental Health Technology is the science of controlling those factors in the physical environment which may exert a harmful effect on man's health. Its scope includes the prevention of communicable diseases and of environmental hazards. It seeks to accomplish these objectives by controlling air and water pollution, liquid and solid waste disposal, housing, milk and food sanitation, industrial hygiene, and ionizing radiation.

The environmental health technician is a member of a professional team devoted to improving our living conditions. As such he will be one who assists the sanitary engineer, the public health scientist, the sanitarian, physicians, and veterinarians employed in the health field.

The program is designed to provide the students with a broad background of environmental and sanitary sciences emphasizing the practical application of the subjects. In addition, the program deals with the ethical and legal responsibilities of public health personnel and the current status of area and national pollution control programs.

In addition to his education in the classroom and laboratory on campus, the student's training includes inspection tours of milk and food processing plants, water and waste water treatment facilities, as well as radiation installations and hospitals.

The curriculum was devised so that if a student wishes to further his college work he may do so. At the same time the student begins immediately with specialty courses which will prepare him for employment upon graduation.

Graduates receive the Associate in Applied Science degree and are qualified for immediate employment in both the public and private sectors. The many job opportunities include positions in health departments, the dairy and food industries, with engineering firms, housing agencies and public health laboratories.

The curriculum is approved by the Public Health Council of the State Health Department. Therefore, graduates can become environmental health technicians in health departments without the usual year of traineeship prior to taking the civil service examination.

# Environmental Health Technology

## 1st YEAR

		Hours Per Week		
		Class	Lab	Credits
<b>Term 1</b>				
EH 101	Environmental Health .....	2	0	2
BI 131	Zoology .....	3	3	4
CH 132	General Chemistry .....	3	3	4
LA 801	English .....	3	0	3
MA 101	*Mathematics .....	3	0	3
MT 110	**Engineering Drawing .....	0	3	1
		14	9	17
<b>Term 2</b>				
EH 102	Environmental Health .....	2	3	3
CH 133	General Chemistry .....	3	3	4
LA 802	English .....	3	0	3
MA 105	Mathematics .....	3	0	3
PH 106	Physics .....	2	2	3
		13	8	16
<b>Term 3</b>				
EH 201	Atmospheric Pollution Control .....	3	3	4
BI 106	Limnology .....	2	6	4
CH 134	General Chemistry .....	3	3	4
LA 803	English .....	3	0	3
PH 107	Physics .....	2	2	3
		13	14	18

## 2nd YEAR

<b>Term 4</b>				
EH 103	Milk Sanitation .....	3	3	4
EH 204	Water Supply and Pollution Control .....	3	3	4
BI 250	Microbiology .....	3	4	5
PH 110	Physics .....	2	2	3
		11	12	16
<b>Term 5</b>				
EH 202	Community Sanitation .....	3	3	4
EH 203	Food Sanitation .....	3	3	4
BI 254	Microbiology .....	2	6	4
LA 804	Effective Speaking .....	3	0	3
LA 820	Economics .....	3	0	3
		14	12	18
<b>Term 6</b>				
EH 205	Water Supply and Pollution Control .....	3	3	4
EH 206	Radiological Health .....	2	3	3
EH 207	Environmental Health Administration .....	1	2	2
BI 207	Parasitology .....	3	3	4
LA 810	Psychology .....	3	0	3
LA 830	Sociology .....	3	0	3
		15	11	19

\*MA 101 Mathematics will not be required if the student has had satisfactory prior training. Alternate course will be substituted.

\*\*Students who have passed GS 132 Engineering Drawing with a C or better will not be required to take MT 110 Engineering Drawing.

## LIBERAL ARTS AND SCIENCES

The Liberal Arts curriculum is a two-year, university-parallel program designed especially for those who wish to continue their college education at a four-year college or university. It offers an Associate in Arts Degree.

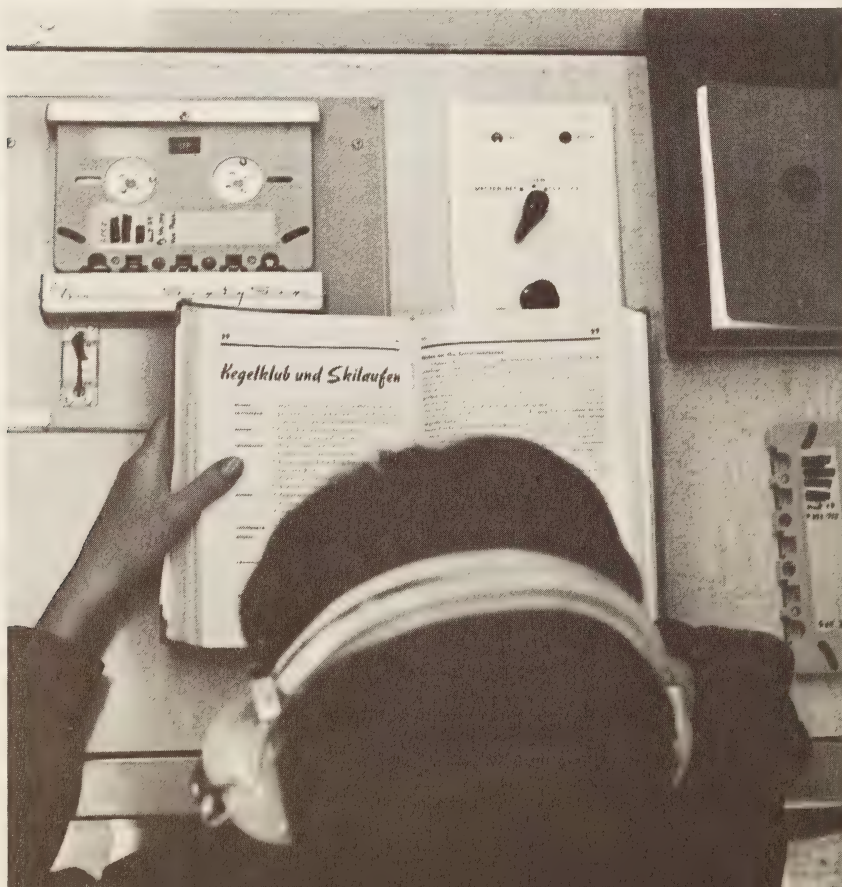
Students finishing this curriculum have completed a breadth of education preparatory to such professional careers as law, medicine and education. A special science-emphasis option offers particularly appropriate preparation for students who plan to move from Broome Tech to pre-medicine, pre-dental or pre-pharmacy programs in four-year colleges.

The required and elective courses give the students essential credits in such areas as mathematics, language, science, social studies and the humanities.

This curriculum, moreover, can perform an exploratory function for many students. It is regarded as an ideal course of study for those who have not yet decided on a specific career. The program enables them to complete certain studies while they are making their career decisions.

## FOREIGN LANGUAGES

1. The point at which a student continues his high school language is determined by his achievement on a placement test.
2. A student who repeats a level of language already studied in high school is cautioned that, although associate degree credit is granted for these studies, he may ultimately lose some language credit at the college to which he transfers and may be required to do additional study to make up this loss at the transfer college.
3. A new language may be started. Four-year colleges do not ordinarily give transfer credit for less than one year of language study, and a two-year sequence is preferable.





# Liberal Arts and Sciences

## 1st YEAR

Term 1			Hours Per Week		
			Class	Lab	Credits
LA	130	English Composition .....	3	0	3
LA	145	Development of Western Civilization .....	3	0	3
		*Mathematics or Elective .....	3-4	0	3-4
		**Science .....	3	3	4
		Language or Philosophy .....	4-3	1-0	4-3
PE	101	Physical Education .....	2	0	1
			17-19	4-3	17-19

### Term 2

LA	131	English Composition .....	3	0	3
LA	146	Development of Western Civilization .....	3	0	3
		*Mathematics or Elective .....	3-4	0	3-4
		**Science .....	3	3	4
		Language or Philosophy .....	4-3	1-0	4-3
PE	102	Physical Education .....	2	0	1
			<u>17-19</u>	<u>4-3</u>	<u>17-19</u>

### Term 3

LA	132	English Composition .....	3	0	3
LA	147	Development of Western Civilization .....	3	0	3
		*Mathematics or Elective .....	3-4	0	3-4
		**Science .....	3	3	4
		Language or Philosophy .....	4-3	1-0	4-3
PE	103	Physical Education .....	2	0	1
			<u>17-19</u>	<u>4-3</u>	<u>17-19</u>

\*Students who have completed 3½ units of secondary school mathematics (through Advanced Algebra) may take a one-year sequence in Analytic Geometry and Calculus, Modern Algebra or a non-mathematics elective.

\*\*Biology, Chemistry, Physics or Physical Science. Students may defer this course until the second year and choose an elective in its place.

## 2nd YEAR

### Term 4

LA	233	English Literature .....	3	0	3
		Social Science Elective .....	3	0	3
		†Electives .....	9	0	9
PE	204	Physical Education .....	2	0	1
			17	0	16†

### Term 5

LA	234	English Literature .....	3	0	3
		Social Science Elective .....	3	0	3
		†Electives .....	9	0	9
PE	205	Physical Education .....	2	0	1
			17	0	16†

### Term 6

LA	235	English Literature .....	3	0	3
		Social Science Elective .....	3	0	3
		†Electives .....	9	0	9
PE	206	Physical Education .....	2	0	1
			17	0	16†

†Students must take enough elective hours to fulfill the degree requirement of a minimum of 99 credit hours.

# Liberal Arts Science-Emphasis Option

Students who intend to continue their education in such fields as medicine, dentistry, pharmacy should take this option.

They should be advised that this curriculum presumes a high level of academic preparation in the secondary school. The student should consult with his faculty advisor when he is doubtful about the adequacy of his pre-college, academic preparation. Sciences may be chosen from Biology, Chemistry, and Physics.

## 1st YEAR

			Hours Per Week		
Term 1			Class	Lab	Credits
LA	130	English Composition .....	3	0	3
LA	145	Development of Western Civilization .....	3	0	3
		*Mathematics or Elective .....	3	0	3
		Science .....	3	3	4
		Science .....	3	3	4
PE	101	Physical Education .....	2	0	1
			17	6	18
Term 2					
LA	131	English Composition .....	3	0	3
LA	146	Development of Western Civilization .....	3	0	3
		*Mathematics or Elective .....	3	0	3
		Science .....	3	3	4
		Science .....	3	3	4
PE	102	Physical Education .....	2	0	1
			17	6	18
Term 3					
LA	132	English Composition .....	3	0	3
LA	147	Development of Western Civilization .....	3	0	3
		*Mathematics or Elective .....	3	0	3
		Science .....	3	3	4
		Science .....	3	3	4
PE	103	Physical Education .....	2	0	1
			17	6	18

\*Students who have completed 3½ units of secondary school mathematics may take a one-year sequence in Analytic Geometry and Calculus, Modern Algebra or a non-mathematics elective.



## 2nd YEAR

### Term 4

LA 233	English Literature .....	3	0	3
	Social Science .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Humanities Elective .....	3	0	3
PE 204	Physical Education .....	2	0	1
		17	6	18

### Term 5

LA 234	English Literature .....	3	0	3
	Social Science .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Humanities Elective .....	3	0	3
PE 205	Physical Education .....	2	0	1
		17	6	18

### Term 6

LA 235	English Literature .....	3	0	3
	Social Science .....	3	0	3
	Science .....	3	3	4
	Science .....	3	3	4
	Humanities Elective .....	3	0	3
PE 206	Physical Education .....	2	0	1
		17	6	18



## MECHANICAL TECHNOLOGY

The nature of industry today makes it more important than ever that applicants for employment have a high degree of technical competence. The purpose of the Mechanical Technology curriculum is to prepare qualified young people of our community to fill the growing demand in industry and business for engineering technicians in the mechanical field.

Recent studies of our complex industrial economy show a critical need for engineering technicians. Many more are needed than can be supplied by two-year colleges, which explains why graduates of this curriculum have little difficulty finding jobs.

Initial employment opportunities are in the area between the skilled craftsman and the professional engineer, with the emphasis in the direction of the engineer.

Recent graduates have been employed in such areas as design drafting, product design, metallurgical laboratories, quality control, time study, purchasing, technical writing and process planning, to name just a few. Some of the companies that hired last year's graduates are IBM, General Electric, New York State Electric and Gas Corp., Link Division of Singer-General Precision, Inc. and Eastman Kodak. Many graduates accept positions far beyond the boundaries of New York State, even though the attempt is made to satisfy the needs of industry in Broome County.

This is an ECPD accredited Engineering Technology curriculum. ECPD is the Engineers Council for Professional Development.



# Mechanical Technology

		Hours Per Week		
Term 1	1st YEAR	Class	Lab	Credits
MT 110	*Engineering Drawing .....	0	3	1
MT 130	Manufacturing Processes .....	2	2	3
AD 100	Orientation .....	1	0	0
LA 801	English .....	3	0	3
LA 810	Psychology .....	3	0	3
MA 140	**College Algebra and Trigonometry .....	4	0	4
PH 140	Physics .....	3	2	4
Term 2		16	7	18
MT 111	Eng. Drawing and Descriptive Geometry .....	1	3	2
MT 131	Manufacturing Processes .....	1	3	2
MT 155	Applied Mechanics .....	3	0	3
LA 802	English .....	3	0	3
MA 141	**Analytic Geometry and Calculus .....	3	0	3
PH 141	Physics .....	3	2	4
Term 3		14	8	17
MT 132	Manufacturing Processes .....	1	3	2
MT 156	Applied Mechanics .....	3	0	3
CH 104	Chemistry .....	3	2	4
LA 803	English .....	3	0	3
MA 142	**Analytic Geometry and Calculus .....	3	0	3
PH 142	Physics .....	3	2	4
		16	7	19
Term 4	2nd YEAR			
MT 240	Precision Measurement .....	1	3	2
MT 257	Strength of Materials .....	3	3	4
MT 261	Fluid Mechanics .....	3	0	3
AD 120	Computer Programming .....	2	2	3
ET 127	Electricity .....	3	3	4
LA 830	Sociology .....	3	0	3
		15	11	19
Term 5				
MT 165	Metallurgy .....	3	3	4
MT 220	Mechanical Design .....	2	3	3
MT 260	Thermodynamics .....	3	3	4
MT 267	Statistical Quality Control .....	3	2	4
ET 128	Electricity .....	3	3	4
		14	14	19
Term 6				
MT 135	Materials and Processes .....	3	3	4
MT 221	Mechanical Design .....	3	3	4
MT 262	Thermodynamics .....	3	3	4
ET 129	Electronics .....	3	3	4
LA 820	Economics .....	3	0	3
		15	12	19

## 2 Quarters of Cooperative Work Required for Graduation

See page 18 for explanation of Cooperative Work Program

\*Students who have passed GS 132 Engineering Drawing with a C or better will not be required to take MT 110 Engineering Drawing.

\*\*Students whose mathematics background is deemed adequate by the Admissions Office may start their mathematics sequence with MA 141. They would then take

## MEDICAL LABORATORY TECHNOLOGY

The demand for medical laboratory technicians is rapidly increasing, with the majority finding employment in hospital clinical laboratories and in analytical, control and research laboratories of chemical and pharmaceutical companies. Others are employed as research assistants at large universities.

To provide the background necessary for work in these areas, the program includes courses in chemistry, physiology, microbiology, pharmacology and physics.

Extensive laboratory work in bioanalytical procedures, chemical instrumentation, microbiological and immunological techniques and radiation physics helps to develop the skill needed for a wide range of job opportunities.

Work in the sciences is balanced by a program in general education including social sciences, English and mathematics.

Training in clinical laboratories provides the opportunity for the practical application of the college study through patient-related experiences.





# Medical Laboratory Technology

Term 1	1st YEAR	Hours Per Week		
		Class	Lab	Credits
BI 100	Ethics and Orientation .....	0	2	1
BI 131	Zoology .....	3	3	4
CH 121	Chemistry .....	3	3	4
LA 801	English .....	3	0	3
LA 810	Psychology .....	3	0	3
MA 101	*Mathematics .....	3	0	3
		15	8	18

Term 2				
BI 132	Zoology (Anatomy) .....	3	3	4
CH 122	Chemistry .....	3	3	4
LA 802	English .....	3	0	3
MA 105	Mathematics .....	3	0	3
PH 106	Physics .....	2	2	3
		14	8	17

Term 3				
BI 135	Zoology (Physiology) .....	3	6	5
CH 123	Chemistry .....	3	3	4
LA 803	English .....	3	0	3
PH 107	Physics .....	2	2	3
PH 110	Physics (Radiation) .....	2	2	3
		13	13	18

## 2nd YEAR Summer Term

Term 4				
BI 233	Introduction to Clinical Physiology .....	2	0	2
BI 234	Physiology .....	2	4	4
BI 250	Microbiology .....	3	4	5
LA 820	Economics .....	3	0	3
LA 830	Sociology .....	3	0	3
		13	8	17

## Fall Term

Clinical Laboratory Experience ..... Graduation Requirement

Term 5				
BI 235	Physiology .....	2	4	4
BI 251	Microbiology .....	3	4	5
CH 224	Organic Chemistry .....	3	3	4
CH 226	Instrumental Analysis .....	2	6	4
		10	17	17

Term 6				
BI 240	Physiology .....	1	6	3
BI 252	Microbiology .....	2	4	4
CH 225	Organic Chemistry .....	2	3	3
CH 227	Instrumental Analysis .....	2	6	4
	Elective .....	3	0	3
		10	19	17

## Summer Term

Clinical Laboratory Experience ..... Graduation Requirement

\*MA 101 Mathematics will not be required if the student has had satisfactory prior training. Alternate course will be substituted.

## **MEDICAL RECORD TECHNOLOGY**

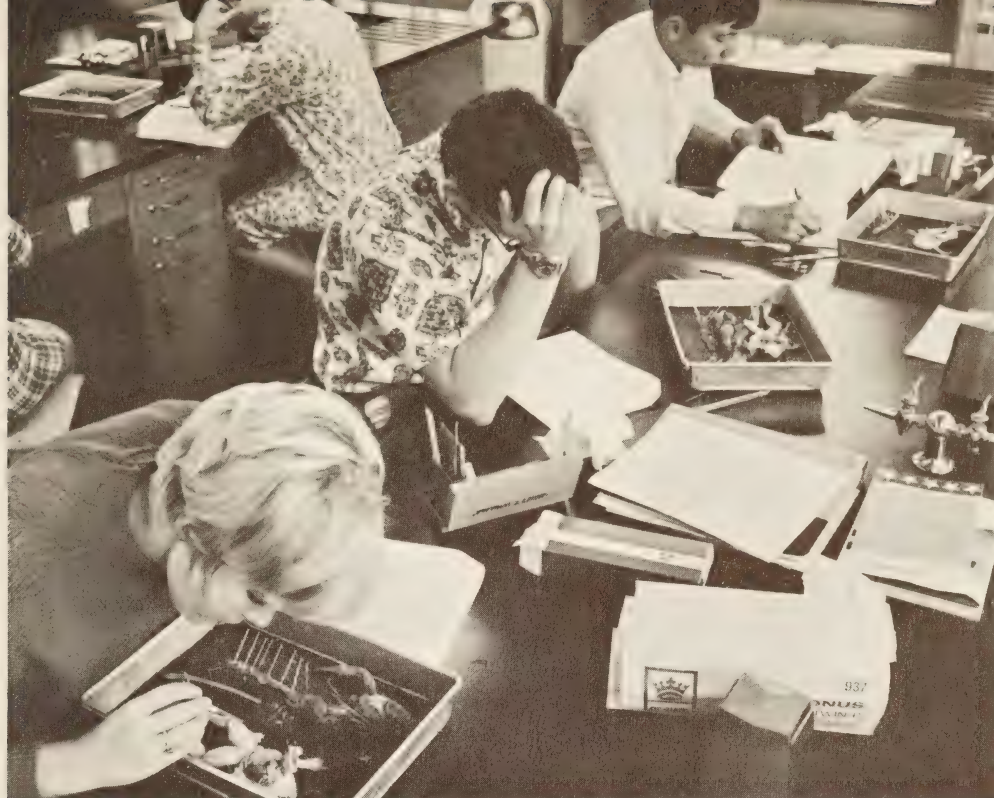
A medical record is the permanent report of a person's illness or injury, kept to preserve information of medical, scientific and legal value. The record includes all medical reports which describe how the patient's illness was diagnosed and treated. Medical records are needed to help doctors diagnose and treat future illness, to verify insurance claims, to plan hospitals, to inform the public health officials, and to aid researchers.

The medical record technician works in the medical record department of a hospital, clinic, nursing home, school of veterinary medicine or other health facility and is responsible for many aspects of preparing, analyzing and preserving health information needed by the patients, by the hospital and by the public. The duties include reviewing medical records for completeness and accuracy and also translating diseases and operations into the proper coding symbols.

They include filing medical records, preparing records for microfilming, typing reports of operations, X-rays and laboratory examinations, history and physical examinations and discharge summaries, compiling statistics of many kinds, assisting the medical staff by preparing special studies and tabulating data from records for research. Supervising the day-to-day operation of a medical record department, taking records to court and maintaining the flow of health information to departments of the hospital are also parts of the total work picture.

The prospects for positions in this field are excellent. The demand for qualified medical record technicians is likely to far exceed the supply for some years to come because of the great rise in numbers and types of hospitals and other health facilities. A skilled medical record technician usually can choose from a variety of well-paid jobs in desirable communities. Salaries are highly competitive and usually better than those of other paramedical positions.

Practice in the college medical record library as well as in the medical record department of cooperating hospitals provides opportunity for educational experience. This experience is the vital core of the program.



## **MEDICAL OFFICE ASSISTANT**

The medical office assistant has many employment opportunities in physicians' offices and related fields. Broome Tech prepares young adults for this career by offering a specialized training that combines physician's office management with office laboratory procedures and some medical record training.

This program is an option of the Medical Record Technology curriculum and the two have a common first year of courses. It is in the second year that the emphasis is placed in the medical office assistant area.

In addition to a basic knowledge of such skills as typing, accounting, office procedure and medical record control, the assistant must know such technical subjects as anatomy, physiology, microbiology and pharmacology. Laboratory procedures of a physician's office, such as urinalysis and hematology, complete the program.

Although it is preferable for a student to make a career decision prior to being accepted by the College, it is possible to choose either the Medical Record Technology or Medical Office Assistant program as late as the end of the first year of study.

There have been too few graduates in recent years to meet the demand for medical office assistants. As a result, employment opportunities have been good in this important phase of medical service.



# Medical Record Technology with Medical Office Assistant Option

**Both Programs Have the Same First Year of Study**  
**1st YEAR**

			<b>Hours Per Week</b>		
			<b>Class</b>	<b>Lab</b>	<b>Credits</b>
<b>Term 1</b>					
BI 100	Ethics and Orientation .....		0	2	1
BI 131	Zoology .....		3	3	4
BU 161	*Typewriting .....		0	5	2
CH 101	Chemistry .....		3	2	4
LA 801	English .....		3	0	3
MA 101	*Mathematics .....		3	0	3
			<hr/>	<hr/>	<hr/>
			12	12	17
<b>Term 2</b>					
MR 102	Medical Terminology .....		2	2	3
BI 171	Anatomy and Physiology .....		3	3	4
BU 162	Typewriting .....		0	5	2
CH 102	Chemistry .....		3	2	4
LA 802	English .....		3	0	3
MA 105	Mathematics .....		3	0	3
			<hr/>	<hr/>	<hr/>
			14	12	19
<b>Term 3</b>					
MR 103	Terms and Transcription .....		2	4	4
MR 104	Record Procedures .....		1	2	2
BI 172	Anatomy and Physiology .....		3	3	4
BU 151	Business English .....		3	0	3
BU 163	Typewriting .....		2	3	3
LA 803	English .....		3	0	3
			<hr/>	<hr/>	<hr/>
			14	12	19

\*MA 101 Mathematics and BU 161 Typewriting will not be required if the student has had satisfactory prior training and/or experience. Alternate courses will be substituted.

# Medical Record Technology

## 2nd YEAR

### Term 4

MR 224	Medical Record Science .....	3	3	4
MR 244	**Medical Record Hospital .....	0	16	4
BU 283	Medical Office Practice .....	2	3	3
LA 804	Effective Speaking .....	3	0	3
LA 810	Psychology .....	3	0	3
		11	22	17

### Term 5

MR 225	Medical Record Science .....	3	3	4
MR 245	**Medical Record Hospital .....	0	16	4
AD 121	Medical Record Processing .....	3	2	4
BU 284	Medical Office Practice .....	2	3	3
LA 820	Economics .....	3	0	3
		11	24	18

### Term 6

MR 226	Medical Record Science .....	3	3	4
MR 246	**Medical Record Hospital .....	0	16	4
BI 285	Pharmacology .....	3	0	3
BU 285	Medical Office Practice .....	2	3	3
LA 830	Sociology .....	3	0	3
		11	22	17

\*\*540 Hours of directed practice required for graduation. This is 60 hours beyond the regular-term commitment, and these extra hours are to be scheduled at the convenience of the hospitals and the students.

# Medical Office Assistant

## 2nd YEAR

### Term 4

BI 204	Medical Office Procedures .....	2	4	4
BU 283	Medical Office Practice .....	2	3	3
LA 804	Effective Speaking .....	3	0	3
LA 810	Psychology .....	3	0	3
PE 204	Physical Education .....	0	2	1
	Liberal Arts Elective .....	3	0	3
		13	9	17

### Term 5

BI 159	Microbiology .....	3	4	5
BI 205	Medical Office Procedures .....	2	4	4
BU 284	Medical Office Practice .....	2	3	3
LA 820	Economics .....	3	0	3
PE 205	Physical Education .....	0	2	1
		10	13	16

### Term 6

BI 206	Medical Office Procedures .....	2	4	4
BI 285	Pharmacology .....	3	0	3
BU 285	Medical Office Practice .....	2	3	3
LA 830	Sociology .....	3	0	3
	Liberal Arts Elective .....	3	0	3
PE 206	Physical Education .....	0	2	1
		13	9	17

## NURSING

Because of the shortage of qualified nurses in Broome County hospitals, Broome Technical Community College is offering a two-year, college-based curriculum to prepare graduates for immediate entrance into the first level of registered nursing. The shortage also means that employment opportunities are plentiful for those satisfactorily completing this program.

Graduates of this curriculum will be eligible to take the New York State licensing examination for registered nurses. They can find immediate employment in bedside nursing care, or they may wish to continue their education for the baccalaureate and higher degrees in the nursing field.

The curriculum, which students should complete in two years, will operate as a college program, with classes and laboratories held on the campus. Clinical instruction is to be in the cooperating hospitals of the Triple Cities. The clinical experiences include caring for individuals in all age groups, as well as observation periods in community health and welfare agencies.

Mature men and women are encouraged to enter this program along with recent high school graduates, whether they are married or single.





# Nursing

## 1st YEAR

		Hours Per Week		
Term 1		Class	Lab	Credits
RN 121	Fundamentals of Nursing .....	4	6	6
BI 131	Zoology .....	3	3	4
CH 101	Chemistry .....	3	2	4
LA 801	English .....	3	0	3
LA 286	Psychology .....	3	0	3
		16	11	20

Term 2				
RN 123	Nursing (Maternal and Child Health) .....	4	6	6
BI 171	Anatomy and Physiology .....	3	3	4
LA 802	English .....	3	0	3
LA 287	Psychology .....	3	0	3
CH 102	Chemistry .....	3	2	4
		16	11	20

Term 3				
RN 124	Nursing (Basic Mental & Physical Illness) ....	4	6	6
BI 172	Anatomy and Physiology .....	3	3	4
LA 803	English .....	3	0	3
LA 288	Psychology .....	3	0	3
	Elective .....	3	0	3
		16	9	19

## 2nd YEAR

Term 4				
RN 224	Nursing (Mental and Physical Illness) .....	6	12	10
BI 250	Microbiology .....	3	4	5
LA 280	Sociology .....	3	0	3
		12	16	18

Term 5				
RN 225	Nursing (Mental and Physical Illness) .....	6	12	10
RN 235	Trends in Nursing .....	0	2	1
LA 281	Sociology .....	3	0	3
	Elective .....	3	0	3
		12	14	17

Term 6				
RN 226	Nursing (Mental and Physical Illness) .....	6	12	10
RN 236	Trends in Nursing .....	0	2	1
LA 282	Sociology .....	3	0	3
	Elective .....	3	0	3
		12	14	17

## X-RAY TECHNOLOGY

X-ray technicians are in great demand, with the majority finding employment in hospitals, with doctors who maintain private practices, for government agencies, both civil and military, and in industry. Their work consists primarily of operating X-ray machines to determine the presence of injury or disease in patients. They also assist physicians in using radiation for treatment of diseases.

The course in X-ray Technology at Broome Tech consists of two academic years and two summers of study both at the College and at cooperating hospitals—Binghamton General, Ideal, Our Lady of Lourdes Memorial and Charles Wilson Memorial—all of which are in close proximity to the college. During the summer sessions, students receive either a weekly stipend or room and board for a maximum of 11 weeks.

Upon satisfactory completion of the program, the student receives the Associate in Applied Science degree from the College. He or she is then eligible to take the New York State Health Department examination, which must be passed in order to be a licensed practicing X-ray technician. The same examination is required for Civil Service appointments.

The student is also qualified to take the diploma examination of the American Registry of Radiologic Technologists so that he/she may become a Registered Technician (R.T.).

An X-ray technician needs to understand why things are done, as well as to know how to do them. Thus at Broome Tech courses are designed to give the student the proper background, so that he can understand the principles involved in his work.

Training in the radiology department of the cooperating hospitals provides the opportunity for the practical application of the college study. This training is the vital core of the program since it enables students to observe and assist in the handling of sick and injured patients as they undergo a wide variety of radiological examinations.

The young man or woman who desires to qualify for this career must be physically capable and mentally alert. He must be fitted by training and personality to work with the sick and injured as well as with the medical profession.

The curriculum is provisionally accredited by the American Medical Association's Council of Medical Education.



# X-Ray Technology

Term 1	1st YEAR	Hours Per Week		
		Class	Lab	Credits
XR 121	Radiography .....	3	4	4
XR 131	Radiological Science .....	0	2	1
XR 141	Hospital Radiographic Technique .....	0	16	4
BI 132	Zoology (Anatomy) .....	3	3	4
LA 801	English .....	3	0	3
MA 101	*Mathematics or LA 850 Political Science ....	3	0	3
<b>Term 2</b>		12	25	19
XR 122	Radiography .....	3	4	4
XR 132	Radiological Science .....	0	2	1
XR 142	Hospital Radiographic Technique .....	0	16	4
BI 133	Zoology (Physiology) .....	3	3	4
LA 802	English .....	3	0	3
PH 106	Physics (Mechanics) .....	2	2	3
<b>Term 3</b>		11	27	19
XR 123	Radiography .....	2	4	3
XR 133	Radiological Science .....	1	0	1
XR 143	Hospital Radiographic Technique .....	0	16	4
LA 803	English .....	3	0	3
PH 107	Physics (Electricity) .....	2	2	3
PH 110	Physics (Radiation) .....	2	2	3
		10	24	17
<b>Summer Term</b>				
XR 113	Physics (X-ray Tube) .....	1	0	1
XR 124	Radiography .....	2	0	2
XR 144	Hospital Radiographic Technique .....	Graduation Requirement		
		3	0	3
Term 4	2nd YEAR			
XR 204	Anatomy (Topographic) .....	1	0	1
XR 224	Radiography .....	1	4	2
XR 234	Radiological Science .....	2	0	2
XR 244	Hospital Radiographic Technique .....	0	24	6
XR 254	Radiotherapy .....	2	0	2
LA 820	Economics .....	3	0	3
<b>Term 5</b>		9	28	16
XR 225	Radiography .....	2	4	3
XR 235	Radiological Science .....	2	0	2
XR 245	Hospital Radiographic Technique .....	0	24	6
LA 810	Psychology .....	3	0	3
<b>Term 6</b>		7	28	14
XR 236	Radiological Science .....	2	0	2
XR 237	Trends in Radiological Science .....	3	0	3
XR 246	Hospital Radiographic Technique .....	0	24	6
LA 830	Sociology .....	3	0	3
		8	24	14
<b>Summer Term</b>				
XR 238	Radiological Science .....	2	0	2
XR 247	Hospital Radiographic Technique .....	Graduation Requirement		

\*MA 101 Mathematics will not be required if the student has had satisfactory prior training and/or experience. Alternate course will be substituted, as noted.



# GENERAL STUDIES CERTIFICATE PROGRAM

The General Studies Certificate Program consists of a year's study and provides students with an opportunity to prepare for acceptance into any degree program on the Broome Tech campus.

This program evolved from the experience gained with the original concept of a Pre-Technical Program which prepared students for the engineering and technological curriculums.

In recent years, many students who completed the Pre-Tech Program have chosen one of the College's ever expanding non-technical offerings.

Therefore, to better fulfill the educational needs of the non-technically oriented students, the college has expanded the original program to include options that are directly related to non-technical curriculums. A sequence of logic for those interested in the liberal arts program has been added to the basic core of the original Pre-Tech Program.

This basic core still includes English, mathematics and physical science. These give the student sufficient general background to study in any of the college's degree programs, if he changes his mind after the year of General Studies Certificate work, regardless which option he pursued.

## General Studies Certificate Program

### ONE YEAR

			Hours Per Week		
Term 1			Class	Lab	Credits
GS 150	English .....		3	0	0
GS 110	Elements of Technical Mathematics .....		5	0	0
GS 101	Physical Science .....		6	0	0
GS 120	Technical Calculations .....		0	4	0
GS 130	*Engineering Drawing (Technical Option) ...		0	3	1
	or				
GS 153	*Verbal Reasoning (Liberal Arts Option) ....		3	0	0
			14-17	7-4	1-0
Term 2					
GS 151	English .....		3	0	0
GS 111	Elements of Technical Mathematics .....		5	0	0
GS 102	Physical Science .....		6	0	0
GS 121	Technical Calculations .....		0	4	0
GS 131	*Engineering Drawing (Technical Option) ...		0	3	1
	or				
GS 154	*Verbal Reasoning (Liberal Arts Option) ....		3	0	0
			14-17	7-4	1-0
Term 3					
GS 152	English .....		3	0	0
GS 112	Elements of Technical Mathematics .....		5	0	0
GS 103	Physical Science .....		3	0	0
GS 122	Technical Calculations .....		0	2	0
GS 140	Chemistry .....		3	2	0
GS 132	*Engineering Drawing (Technical Option) ...		0	3	1
	or				
GS 155	*Verbal Reasoning (Liberal Arts Option) ....		3	0	0
			14-17	7-4	1-0

\*Options are 3-quarter sequences, so students must take all three courses in the same option.

# COURSE DESCRIPTIONS

## Numbering System

All Broome Tech course numbers are preceded by two letters which in most instances stand for the department of the College responsible for teaching them. Courses numbered from 100 to 199 are generally first-year level and those from 200 to 299 second-year.

AD .....	Special Programs (Non-Departmental)
BI .....	Biological Sciences
BU .....	Business
CH .....	Chemical Technology
CT .....	Civil Technology
DH .....	Dental Hygiene
EH .....	Environmental Health
ET .....	Electrical Technology
GS .....	General Studies Certificate Program
LA .....	Liberal Arts
MA .....	Mathematics
MR .....	Medical Record Technology
MT .....	Mechanical Technology
PE .....	Physical Education
PH .....	Physics
RN .....	Nursing
XR .....	X-Ray Technology

## SPECIAL PROGRAMS

### COMPUTING CENTER

An IBM 1130 digital computer is an outstanding example of Broome Tech's modern equipment. Many colleges have built their engineering and business courses around the computer, and many industries depend on its rapid calculations. Consequently, both transfer-minded students and those preparing for immediate employment after graduation are being introduced to the world of the computer. Most students in technical programs and in the business curriculums receive instruction in using the 1130. The computer is also used for record-keeping by the College's administration.

The College has recently added the IBM System 360/Model 20, which is used to support the data processing instruction in the Business curriculums.

<b>AD 110    Orientation</b>	<b>0 Credits</b>
A definition of the engineering technician, his college, training, responsibilities and future. The use of the slide rule and study techniques.	
	<b>1 Class Hour</b>

<b>AD 111    Computer Programming and             Numerical Analysis</b>	<b>3 Credits</b>
Programming and the use of the IBM 1130 digital computer. Fortran IV along with block diagramming, numbering and coding systems. Numerical topics such as types of errors, evaluation of functions, roots of equations, introduction to machine level language via a simulator language. Graphic plotter programming.	
<b>2 Class Hours, 2 Laboratory Hours</b>	
<b>Prerequisite: MA 171 Analytic Geometry and Calculus</b>	

## AD 120 Fundamentals of Computer Programming 3 Credits

Historical development of computers, introduction to data processing systems, binary, octal and hexadecimal mathematics and the IBM 1130 digital processing system. Machine language instructions and Fortran IV will be studied along with block diagramming and debugging techniques. Discussion of monitor and executive systems including the concept of time sharing.

Programming drills and exercises will reinforce the basic principles by providing "hands-on" training.

**2 Class Hours, 2 Laboratory Hours**

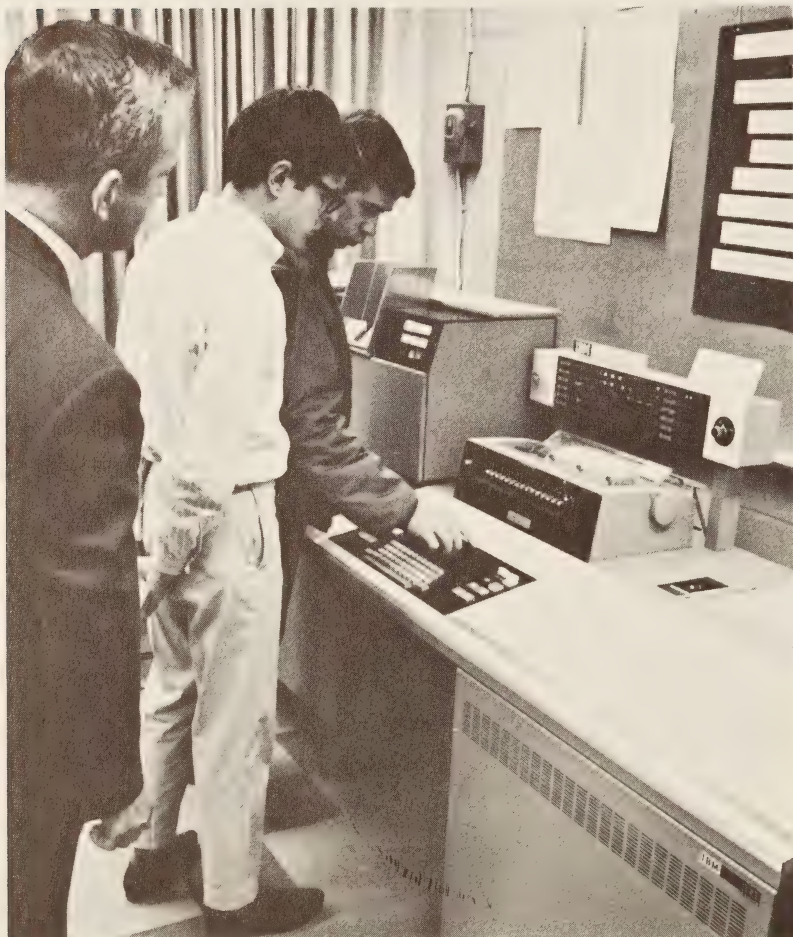
**Prerequisite: MA 141 Analytic Geometry and Calculus**

## AD 121 Medical Record Processing 4 Credits

The use of punched card equipment, design of forms and use of electronic computers with application in the field of medical statistics and records. Basic principles of flow charting and introduction to programming, with emphasis on electronic computers and auxiliary equipment.

**3 Class Hours, 2 Laboratory Hours**

**Prerequisite: MA 105 Mathematics**





## **BIOLOGICAL SCIENCES**

### **BI 100 Ethics and Orientation**

**1 Credit**

History and scope of health specialties. Field trips. Professional ethics. Responsibility of health personnel to self, employer, physician and patient. Professional affiliation.

**2 Laboratory Hours**

### **BI 101 Biology**

**4 Credits**

A principles approach to the science of biology. As the basis of life the principle of cellular metabolism is related to cellular structure and function. The principle of organism perpetuation is developed by studies of genetics, embryology and reproduction.

**3 Class Hours, 3 Laboratory Hours**

### **BI 102 Biology**

**4 Credits**

A principles approach to the science of biology continued. The principles of organism maintenance and integration are developed by an emphasis on human organ systems. The principle of evolution is introduced and exemplified by a survey of the plant and animal kingdoms.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: BI 101 Biology**

### **BI 103 Biology**

**4 Credits**

A principles approach to the science of biology continued. The principle of diversity is further developed by studying the more highly evolved animal groups. Principle of ecological interrelatedness of organisms. Ecological and evolutionary principles are integrated by considering past and present distribution of organisms on the earth's surface.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: BI 102 Biology**

### **BI 106 Limnology**

**4 Credits**

Chemistry, physics, geology and biology of fresh water lakes, rivers and streams. Water sampling techniques, fresh water organisms, health and recreational aspects of fresh water pollution.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisites: BI 131 Zoology and one term of inorganic chemistry**

### **BI 111 Standard First Aid Course**

**1 Credit**

Fundamentals of first aid as outlined by the standard Red Cross course. For Dental Hygiene students, additional specialized seminars may be conducted.

**1 Class Hour**

### **BI 131 Zoology**

**4 Credits**

Anatomy and physiology of animals, including chemical and physical processes such as cellular respiration, reproduction and development, energy production and transfer.

**3 Class Hours, 3 Laboratory Hours**

### **BI 132 Zoology (Anatomy)**

**4 Credits**

Gross and functional anatomy of the human body. Intensive study of all systems illustrated by specimens and models. Detailed dissection and microscopic study of foetal pig. Terminology.

**3 Class Hours, 3 Laboratory Hours**

### **BI 133 Zoology (Physiology)**

**4 Credits**

Fundamental physiological processes and how these processes regulate the human machine. Emphasis on general principles, integration, organization and control.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: BI 132 Zoology (Anatomy) or BI 102 Biology**

**BI 135 Zoology (Physiology) 5 Credits**

Fundamental physiological processes and how they regulate the human machine. Emphasis on general principles, integration, organization, control. These are same topics as BI 133 Zoology (Physiology) but with additional laboratory stress on chemical and physical measurements of body processes.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: BI 132 Zoology (Anatomy)**

**BI 159 Microbiology 5 Credits**

General and medical microbiology. The basic phases of immunology. Asepsis, disinfection, sterilization, cultivation, identification. Test used for diagnosis and immunization.

**3 Class Hours, 4 Laboratory Hours**

**Prerequisite: CH 102 Chemistry**

**BI 161 Nutrition 3 Credits**

Basic nutrition, essential nutrients, requirements and recommended allowances. The role of dietary intake in an individual's health.

**3 Class Hours**

**BI 171 Anatomy and Physiology 4 Credits**

Gross and microscopic anatomy of the human body and the function of its parts. Emphasis is on form and structure. Laboratory work includes microscopic anatomy, dissection of the foetal pig and cat, a study of the systems and their interrelationships. Dental hygiene students will take a two-hour laboratory.

**3 Class Hours, 3 Laboratory Hours**

**BI 172 Anatomy and Physiology 4 Credits**

Continued study of gross and microscopic anatomy, the relationship of function to structure, with emphasis on basic physiology. Chemical tests and additional dissection. Dental hygiene students will take a two-hour laboratory.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: BI 171 Anatomy and Physiology**

**BI 176 Dental Histology 4 Credits**

Lecture and laboratory study of the fundamental body tissues and different phases of embryonic development. Emphasis on the origin and structure of the tissues of the oral cavity.

**3 Class Hours, 2 Laboratory Hours**

**Prerequisite: BI 172 Anatomy and Physiology**

**BI 204 Medical Office Procedures 4 Credits**

Laboratory introduction to microscopic and chemical analysis of blood and urine as performed in the physician's office.

**2 Class Hours, 4 Laboratory Hours**

**BI 205 Medical Office Procedures 4 Credits**

Medical assisting procedures used in the physician's office including office management, caring for medical and surgical instruments, first aid and aide-training for civil emergencies. Professional ethics, jurisprudence and nomenclature.

**2 Class Hours, 4 Laboratory Hours**

**Prerequisite: MR 102 Medical Terminology**

**BI 206 Medical Office Procedures 4 Credits**

Advanced technical procedures in medical assisting including such specialties as electrocardiography, audiometry, physical therapy. Includes field trips and practice experiences.

**2 Class Hours, 4 Laboratory Hours**

**Prerequisite: BI 205 Medical Office Procedures**



### **BI 207 Parasitology 4 Credits**

Parasites and insects of importance in environmental health. Identification and control procedures.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: BI 131 Zoology or BI 103 Biology**

### **BI 233 Introduction to Clinical Physiology 2 Credits**

Emphasis on cellular functions such as respiration, digestion, metabolism, synthesis and excretion.

**2 Class Hours**

**Prerequisite: BI 135 Zoology (Physiology) and one term of inorganic chemistry**

### **BI 234 Physiology 4 Credits**

Continued study of physiological processes. Emphasis on blood and circulatory system.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: BI 135 Zoology (Physiology)**

### **BI 235 Physiology 4 Credits**

Emphasis on the body functions of respiration, digestion, metabolism and excretion. Laboratory work includes related chemical tests and physio-chemical measurements of the body functions.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: BI 234 Physiology and CH 224 Chemistry**

### **BI 236 Histology 4 Credits**

The essential morphological and functional characteristics of tissues and organs of the animal body. Technique of animal tissue preparation, both frozen and imbedded.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: BI 132 Zoology (Anatomy) or BI 102 Biology**

### **BI 237 Genetics 5 Credits**

Comprehensive coverage of heredity and variation. Integration of fundamental biological principles including microbial genetics to illustrate many of the important genetic principles that apply to all forms of life.

**3 Class Hours, 4 Laboratory Hours**

**Prerequisites: BI 102 Biology or BI 131 Zoology and BI 250 Microbiology**



**BI 239 Embryology** **5 Credits**

Vertebrate reproduction and development from single-celled egg to complete organ systems. Cellular, tissue and organ differentiation and organization. Based primarily on frog, chick and pig development.

**3 Class Hours, 4 Laboratory Hours**

**Prerequisite: BI 102 Biology**

**BI 240 Physiology** **4 Credits**

Functions of the body including enzyme systems, the endocrines, electrolyte balance and acid-base regulation. Emphasizes the physiological processes involved and related assays.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: BI 235 Physiology and CH 225 Chemistry**

**BI 250 Microbiology** **5 Credits**

The biology of the common bacteria and related micro-organisms. Non-pathogens and pathogens. Basic phases of immunology. Asepsis, disinfection, sterilization, cultivation, identification.

**3 Class Hours, 4 Laboratory Hours**

**Prerequisite: 1 year of biological science or of chemistry**

**BI 251 Microbiology** **5 Credits**

A continuation of BI 250 Microbiology. Emphasis on infectious diseases, communicability, diagnoses and identification of causative organisms, including microbiology and parasitology.

**3 Class Hours, 4 Laboratory Hours**

**Prerequisite: BI 250 Microbiology**

**BI 252 Microbiology** **4 Credits**

Continued study of the principles of immunity and the practice of serological techniques. Agglutination and precipitation tests in general, inflammation and leucocyte response, blood grouping and typing.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: BI 251 Microbiology**

**BI 253 Microbiology** **3 Credits**

Continued study of the principles of immunity, with emphasis on blood banking and serology.

**1 Class Hour, 4 Laboratory Hours**

**Prerequisite: BI 250 Microbiology**

**BI 254 Microbiology** **4 Credits**

Microbiological analysis of milk, food, water, sewage, air.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: BI 250 Microbiology**

**BI 285 Pharmacology** **3 Credits**

The action of drugs, their sources, properties, preparation. Administration, the mathematics of pharmacy and prescription writing.

**3 Class Hours**

**Prerequisites: BI 133 Zoology (Physiology) or BI 135 Zoology (Physiology) or BI 172 Anatomy and Physiology and BI 250 Microbiology or BI 159 Microbiology**

**BI 286 Mathematics (Pharmacy)** **1 Credit**

Mathematical calculations as applied to the preparation of drugs and solutions.

**1 Class Hour**

## **BUSINESS**

- BU 101 Accounting** 4 Credits  
Basic concepts and procedures used in the accounting cycle. Emphasis is on the journals, ledgers, and financial statements. **4 Class Hours**
- BU 102 Accounting** 4 Credits  
Accounting for cash, receivables, payables, inventory, and long term assets. The use of the voucher system. Accounting procedures for partnerships. **4 Class Hours**  
**Prerequisite:** BU 101 Accounting
- BU 103 Accounting** 4 Credits  
Accounting for corporations and manufacturing concerns. Bonds and the interpretation and analysis of financial statements. Use of a corporate practice set. **4 Class Hours**  
**Prerequisite:** BU 102 Accounting
- BU 104 Accounting** 4 Credits  
Accounting for corporations and manufacturing concerns. Payroll procedures, interpretation and analysis of financial statements. Use of a corporate set of books. **4 Class Hours**  
**Prerequisite:** BU 102 Accounting
- BU 130 Introduction to Electronic Data Processing** 3 Credits  
Historical development of electronic data processing systems and how they perform business functions. The data processing cycle, the punched card and operation of unit record equipment. Basic computer concepts including their nature, capabilities, limitations. Introduction to the functional units of a computer and the stored program. **3 Class Hours**  
**Prerequisite:** BU 101 Accounting
- BU 141 Business Mathematics** 3 Credits  
Review of arithmetic operations. Preparation and use of shortcut operations. Instruction, review and drill in percentage. Cash and trade discounts, markup, payroll, sales, property and other taxes. Simple and compound interest, bank discounts, interest, investments, annuities. **3 Class Hours**
- BU 142 Business Statistics** 3 Credits  
Concepts and mechanics of basic statistical methods applicable to problems of business and economics. **3 Class Hours**  
**Prerequisite:** BU 141 Business Mathematics
- BU 145 Business Law** 3 Credits  
Brief study of the federal and state judicial systems. Basic principles of contracts, involving the requisites for valid contracts, parties to the contracts, offer and acceptance, performance and discharge. Applications of contracts to agency. Legal aspects of partnerships and corporations, real estate law. **3 Class Hours**
- BU 146 Business Law** 3 Credits  
Contracts as applied to sales, bailments, carriers, warehousemen. Negotiable instruments, the rights and obligations associated with them. **3 Class Hours**  
**Prerequisite:** BU 145 Business Law

**BU 151 Business English 3 Credits**

Development of desirable letter writing style. Review of basic letter mechanics. Inquiry and reply, claim and adjustment, credit and collection, sales and promotion, application letters. Composition of business correspondence. **3 Class Hours**

**BU 160 Typewriting 2 Credits**

Development of basic techniques of typewriter operation such as keyboard mastery, accurate and rhythmical stroking, and correct procedures in care and use of the machine. Projects include business letters, forms, manuscripts. **5 Laboratory Hours**

**BU 161 Typewriting 2 Credits**

A beginning sequence in touch typewriting to make the operator accurate, rhythmical and moderately rapid in the operation of the typewriter. Development of correct procedures in care and use of the machine. Projects include simple business letters, tabulations, manuscripts, building of typewriting speed. **5 Laboratory Hours**

**BU 162 Typewriting 2 Credits**

Development of proficiency of techniques in typing business letters, tabulations and miscellaneous business forms. **5 Laboratory Hours**

**Prerequisite: BU 161 Typewriting or equivalent**

**BU 163 Typewriting 3 Credits**

Continuation of basic skill building with emphasis on speed and accuracy in typing advanced materials, such as rough drafts, complicated tabulations, manuscripts, legal papers and specifications. **2 Class Hours, 3 Laboratory Hours**

**Prerequisite: BU 162 Typewriting**

**BU 164 Shorthand 3 Credits**

A beginning course in Gregg Shorthand, Diamond Jubilee System. Basic principles to promote the ability to read fluently from plates and notes. Longhand transcription from shorthand notes dictated from familiar material at a minimum rate of 60 words per minute. **2 Class Hours, 3 Laboratory Hours**

**BU 165 Shorthand 3 Credits**

Emphasis on shorthand writing ability at sustained speeds. Transcription at the typewriter from shorthand notes dictated from non-previewed materials at a rate of 60 to 120 words per minute. **2 Class Hours, 3 Laboratory Hours**

**Prerequisites: BU 161 Typewriting or equivalent  
and BU 164 Shorthand or equivalent**

**BU 166 Shorthand 3 Credits**

Emphasis on speed in shorthand writing. Transcription at the typewriter from shorthand notes dictated from non-previewed materials at a rate of 80 to 140 words per minute. **2 Class Hours, 3 Laboratory Hours**

**Prerequisites: BU 162 Typewriting and BU 165 Shorthand and  
BU 167 Transcription**

**BU 167 Transcription 3 Credits**

Development of skill in producing mailable transcripts at the typewriter from the student's shorthand notes. Emphasis on the correct use of grammar, spelling, punctuation, capitalization, vocabulary, numbers. **2 Class Hours, 3 Laboratory Hours**

**Prerequisites: BU 161 Typewriting or equivalent  
and BU 164 Shorthand or equivalent**



- BU 204 Intermediate Accounting** **4 Credits**  
 Assets, liability, capital and operating accounts comprising financial statements. Generally accepted accounting principles followed in the preparation of these statements. Analysis of working capital and preparation of fund and cash flow statements.  
**4 Class Hours**  
**Prerequisite: BU 103 Accounting**
- BU 205 Intermediate Accounting** **4 Credits**  
 Advanced study of partnership accounting including liquidations. Corporation accounting including preparation of consolidated statements, treasury stock, bonds and retained earnings.  
**4 Class Hours**  
**Prerequisite: BU 204 Intermediate Accounting**
- BU 206 Intermediate Accounting** **4 Credits**  
 Installment sales, home office and branch accounting, financial statement analysis. Special ratios, measurements and analysis of operations.  
**4 Class Hours**  
**Prerequisite: BU 205 Intermediate Accounting**
- BU 207 Cost Accounting** **4 Credits**  
 The nature and purpose of cost accounting. Accounting for direct labor, materials, and factory overhead with emphasis on job order costing. Standard cost principles and procedures.  
**4 Class Hours**  
**Prerequisite: BU 103 Accounting**
- BU 208 Cost Accounting** **4 Credits**  
 Process cost system, inventories, spoilage, factory ledger, special journals.  
**4 Class Hours**  
**Prerequisite: BU 207 Cost Accounting**
- BU 210 Cost Accounting** **4 Credits**  
 Direct costing, payroll, capital budgeting and non-manufacturing costs.  
**4 Class Hours**  
**Prerequisite: BU 208 Cost Accounting**
- BU 221 Computer Programming** **3 Credits**  
 Historical development of computers together with an introduction to data processing systems. The Fortran language, and an introduction to machine language. An introduction to binary and other base numbering systems, flow diagramming, scaling, techniques of program checking and error analysis.  
 Applied theory in the laboratory by programming solutions to business problems using the Fortran language.  
**2 Class Hours, 2 Laboratory Hours**  
**Prerequisite: BU 103 Accounting**
- BU 223 Internal Auditing** **4 Credits**  
 Internal auditing is an independent appraisal activity within an organization for the review of accounting, financial and other operations as a basis for service to management. It is a managerial control, which functions by measuring and evaluating the effectiveness of other controls.  
**4 Class Hours**  
**Prerequisite: BU 103 Accounting**
- BU 230 Business Data Processing** **3 Credits**  
 IBM card design, familiarity with the key punch, sorter, reproducer, and collator. Comprehensive study of programming unit records equipment. Use of various wiring diagrams and wiring panels. Emphasis on the "hands-on" approach to learning.  
**2 Class Hours, 2 Laboratory Hours**  
**Prerequisite: BU 130 Introduction to Electronic Data Processing**

### **BU 231 Business Data Processing**

**3 Credits**

Continuation of programming unit record equipment. Laboratory projects covering business data processing cycle. Student is required to design, punch tabulating cards, program and write up several projects. The final projects are tabulated on the unit record equipment by the student.

**2 Class Hours, 2 Laboratory Hours**

**Prerequisite: BU 230 Business Data Processing**

### **BU 241 Computer Programming — RPG**

**3 Credits**

Review of fundamental concepts of stored-program computers, various memory devices, and input-output media. IBM System 360 hardware and concepts. Preparation and execution of programs in RPG (Report Program Generator) language.

**2 Class Hours, 2 Laboratory Hours**

**Prerequisite: BU 231 Business Data Processing**

### **BU 251 Office Management**

**3 Credits**

The concept of planning, directing, controlling office work through systems, layouts and the selection of equipment. Methods of actuating office personal. **3 Class Hours**

### **BU 252 Business Report Writing**

**3 Credits**

Training in logical analysis of business case problems, applied to the preparation of accurate written reports. Methods and skills used in formal and informal business writing. Preparation of tables, charts, reference citations and bibliographies.

**3 Class Hours**

**Prerequisite: BU 151 Business English**

### **BU 253 Personnel Administration**

**3 Credits**

Techniques and methods used to achieve utilization of manpower in business through proper selection, placement, training, job evaluation, wage setting, employee relations. **3 Class Hours**



**BU 260 Engineering Shorthand 3 Credits**

Emphasis on increasing knowledge of basic information and vocabulary, with dictation and transcription of specialized material from selected areas of the physical sciences.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisites:** BU 163 Typewriting and BU 166 Shorthand and BU 167 Transcription

**BU 261 Engineering Shorthand 3 Credits**

Emphasis on increasing knowledge of basic information and vocabulary, with dictation and transcription of specialized material from selected areas of engineering and of scientific research.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite:** BU 260 Engineering Shorthand

**BU 263 Technical Typewriting 3 Credits**

Specialized training in understanding the correct procedures in preparing typewritten technical materials. Emphasis on typing equations, formulas, laboratory reports.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite:** BU 260 Engineering Shorthand

**BU 270 Executive Shorthand 3 Credits**

Emphasis on increasing knowledge of basic information and vocabulary, with dictation and transcription of specialized material from the fields of finance and real estate.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisites:** BU 163 Typewriting and BU 166 Shorthand and BU 167 Transcription

**BU 271 Executive Shorthand 3 Credits**

Emphasis on increasing knowledge of basic information and vocabulary, with dictation and transcription of specialized material from the fields of law and insurance.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite:** BU 270 Executive Shorthand

**BU 274 Office Practice 4 Credits**

Practical experiences in the operation of adding, calculating, duplicating, transcribing machines. Emphasis on grooming, business ethics, problem-solving techniques in an office atmosphere.

**2 Class Hours, 4 Laboratory Hours**

**Prerequisites:** BU 163 Typewriting and BU 167 Transcription

**BU 275 Office Practice 4 Credits**

Continued development of office machines operations. Useful application of filing procedures. Opportunity for advanced study and skill development projects.

**2 Class Hours, 4 Laboratory Hours**

**Prerequisite:** BU 274 Office Practice

**BU 280 Speed Shorthand 3 Credits**

Introduction of special shortcuts to increase efficiency in taking dictation at higher speeds. Dictation of a variety of materials from 100 to 160 words per minute.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite:** BU 261 Engineering Shorthand or BU 271 Executive Shorthand

**BU 283 Medical Office Practice 3 Credits**

Practical experiences in the filing of business records. Correct telephone procedures. Operation of various adding, calculating, transcribing, duplicating machines, as used in medical offices.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite:** BU 163 Typewriting



## **BU 284 Medical Office Practice 3 Credits**

The useful application of record-keeping beginning with the basic accounting concepts and utilizing the practical transitions through the entire accounting cycle. Emphasis on the books of entry and their application in preparing various accounting statements used in a medical office.

**2 Class Hours, 3 Laboratory Hours**

## **BU 285 Medical Office Practice 3 Credits**

Efficient management of the medical office. Practical usage of medical forms used by insurance companies, workmen's compensation boards, welfare departments and other applicable papers. Advanced medical transcription techniques developed through the use of case histories, admission and discharge summaries, surgical reports.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisites: BU 283 Medical Office Practice and  
BU 284 Medical Office Practice**

## **BU 290 Salesmanship 3 Credits**

The principles of sales with practical applications. Prospecting, product and service analysis, meeting objections, demonstrating, sales psychology, preparation of sales presentations.

**3 Class Hours**

## **BU 291 Sales Management 3 Credits**

Development of control techniques in the administration of sales forces. Incentive systems, territory planning, development of sales potentials, personnel problems peculiar to this field.

**3 Class Hours**

**Prerequisites: BU 142 Business Statistics and BU 290 Salesmanship**

## **BU 292 Marketing 3 Credits**

The distributive phase of economics, from the time a good or service is produced up to the point of consumption; marketing functions; classification of goods and of markets; marketing channels and agents in each. Lectures, discussions, case problems.

**3 Class Hours**

## **BU 293 Advertising 4 Credits**

Development, economics, functions of advertising. Cost and application, the various media, advertising as a vocation, testing and research utilization. Lectures, demonstrations, field trips.

**4 Class Hours**

**Prerequisite: BU 292 Marketing**

## **BU 294 Advertising 4 Credits**

Detailed development of advertisements, copy and layout, method and problems of reproduction. Planning the advertising campaign with step-by-step development.

**4 Class Hours**

**Prerequisite: BU 293 Advertising**

## **BU 295 Market Research 3 Credits**

Methods of collecting and interpreting marketing information. Specific applications to problems in market development, market potential, sales management.

**3 Class Hours**

**Prerequisites: BU 142 Business Statistics and BU 292 Marketing**

**BU 296 Credit****3 Credits**

Types of credit, credit department organization, credit reports and information, credit risk factors, collection procedures, analysis of financial statements.

**3 Class Hours****Prerequisite: BU 102 Accounting****BU 297 Marketing Management****3 Credits**

Analysis of problems and activities in managing the marketing responsibility of manufacturing and wholesaling firms. Study of formulation of product, brand, distribution, pricing policies and their applications.

**3 Class Hours****Prerequisite: BU 298 Marketing****BU 298 Marketing****3 Credits**

Continuation of BU 292 Marketing. Application of fundamental precepts established in the basic course. Detailed study of the functional analysis of institutions and marketing costs. Relationship to advertising and sales promotion. Advanced marketing philosophy. Lectures and discussions with emphasis on case problems.

**3 Class Hours****Prerequisite: BU 292 Marketing**

## **CHEMISTRY**

**CH 101 Chemistry****4 Credits**

Fundamental concepts of inorganic chemistry including composition of substances, kinetic and molecular theories, atomic structure and bonding, solutions and colloids, ions in solution and nucleonics. Nursing and Medical Office Assistant students will take a two-hour laboratory.

**3 Class Hours, 2 Laboratory Hours****CH 102 Chemistry****4 Credits**

Fundamental concepts of organic and biological chemistry including proteins, fats, carbohydrates, and their role in metabolism. Also a chemical consideration of vitamins, hormones, enzymes and the fluids of the body.

**3 Class Hours, 2 Laboratory Hours****CH 104 Chemistry****4 Credits**

Basic laws, principles and theories of chemistry. Structure of matter, periodicity, chemical action, states of matter and solutions, elements of organic chemistry.

**3 Class Hours, 2 Laboratory Hours****CH 105 Chemistry****3 Credits**

Fundamental concepts of organic chemistry, including carbohydrates, lipids and proteins and their role in metabolism. Same material in class as in CH 102 Chemistry except that this course has no laboratory hours.

**3 Class Hours****CH 110 Chemistry****5 Credits**

A theoretical treatment of fundamental principles and laws underlying chemical action, their integration with the theories of atomic structure and chemical bonding, and correlation with the position of the elements on the periodic chart. Atomic structure, the periodic chart, chemical bonding, the states of matter, gases, thermochemistry, chemical arithmetic, with emphasis on structure and energy changes.

**4 Class Hours, 3 Laboratory Hours**

**CH 111 Chemistry****5 Credits**

A continuation of CH 110 Chemistry to include solid and liquid structure, solutions, chemical and physical equilibrium, introduction to chemical kinetics, voltaic cells, electrolytic cells, redox, nuclear chemistry.

**4 Class Hours, 3 Laboratory Hours****Prerequisite: CH 110 Chemistry****CH 112 Chemistry****6 Credits**

First in a sequence of courses to familiarize the student with analytical chemistry in which both qualitative analysis and quantitative analysis are integrated. Theory in solution equilibria and chemical methods of separation and measurement. The laboratory work in qualitative chemistry includes the identification of the more important cations and anions and the analysis of mixtures. The quantitative portion includes gravimetry, neutralimetry, precipitometry, redoximetry and compleximetry.

**4 Class Hours, 6 Laboratory Hours****Prerequisite: CH 111 Chemistry****CH 121 Chemistry****4 Credits**

Fundamental concepts of inorganic chemistry including composition of substances, kinetic and molecular theories, atomic structure and bonding, solutions and equilibrium.

**3 Class Hours, 3 Laboratory Hours****CH 122 Chemistry****4 Credits**

Coordination chemistry, oxidation reduction and electrochemistry, the colloidal state, complex equilibrium. These concepts are applied by study of qualitative cation analysis in the laboratory.

**3 Class Hours, 3 Laboratory Hours****Prerequisites: CH 121 Chemistry and MA 101 Mathematics****CH 123 Chemistry****4 Credits**

Continuation of CH 122 Chemistry and includes theory and laboratory in volumetric and gravimetric analysis.

**3 Class Hours, 3 Laboratory Hours****Prerequisites: CH 122 Chemistry and MA 102 Mathematics****CH 132 General Chemistry****4 Credits**

Fundamental principles, laws, and theories of chemistry relating to simple atomic and molecular structure, periodicity, bonding, stoichiometric relationship, states of matter, water.

**3 Class Hours, 3 Laboratory Hours****CH 133 General Chemistry****4 Credits**

A continuation of CH 132 General Chemistry. Solutions, ionization and electrolytes, acids-bases-salts, pH, colloids, equilibrium.

**3 Class Hours, 3 Laboratory Hours****Prerequisite: CH 132 General Chemistry****CH 134 General Chemistry****4 Credits**

A continuation of CH 133 General Chemistry. Basic concepts of organic and nuclear chemistry, descriptive chemistry of some common elements.

**3 Class Hours, 3 Laboratory Hours****Prerequisite: CH 133 General Chemistry****CH 135 Chemistry****4 Credits**

Fundamental principles and laws underlying chemical action, their integration with the theories of atomic structure and chemical bonding, and correlation with the position of the elements on the periodic chart. Topics discussed are atomic structure, the periodic chart, chemical bonding, water and the states of matter.

**3 Class Hours, 3 Laboratory Hours**





### **CH 136 Chemistry**

**4 Credits**

Continuation of CH 135 Chemistry. Solutions, oxidation-reduction, ionization and electrolysis, acids, bases and salts, chemical equilibrium and coordination compounds.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: CH 135 Chemistry**

### **CH 137 Chemistry**

**4 Credits**

A theoretical discussion of ionization constants, solubility products and equilibrium constants as influencing qualitative analysis. Laboratory work includes the detection and identification of the more important cations and anions including work on the analysis of mixtures.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: CH 136 Chemistry**

### **CH 224 Organic Chemistry**

**4 Credits**

An integrated general presentation of theory, nomenclature, preparation, properties, reactions, occurrence and uses of important aliphatic and aromatic organic compounds.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: CH 123 Chemistry**

### **CH 225 Organic Chemistry**

**3 Credits**

Continuation of CH 224 Organic Chemistry and includes such topics as proteins, lipids and carbohydrates, alkaloids, steroids, vitamins and enzymes.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite: CH 224 Organic Chemistry**

### **CH 226 Instrumental Analysis**

**4 Credits**

Instrumental methods of analytical chemistry, primarily optical methods. Laboratory work in visible, ultraviolet and infrared spectrophotometry. Chromatography—column, paper, thin layer, ion exchange, gas. Chemical microscopy, emission spectroscopy, electrophoresis.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisites: CH 123 Chemistry and CH 224 Organic Chemistry**

**CH 227 Instrumental Analysis** **4 Credits**

Theory and laboratory instruction in electrochemical methods of analysis, including potentiometry, polarography, coulometry, conductimetry and radiochemistry.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 226 Instrumental Analysis**

**CH 241 Quantitative Analysis** **5 Credits**

A continuation of CH 112 Chemistry with an emphasis on the application of physical and chemical theory to the more important gravimetric, volumetric and elementary instrumental methods of analysis. Laboratory work requires statistical treatment of analytical data and the practical application of computer programming for quantitative analysis.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 112 Chemistry**

**CH 242 Quantitative Analysis** **5 Credits**

Instrumental methods of analytical chemistry, primarily electrochemical methods. Laboratory experiments in potentiometry, polarography, coulometry, conductimetry, radiochemistry and electrogravimetry. Related technical report writing.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 241 Quantitative Chemistry**

**CH 243 Instrumental Methods of Analysis** **5 Credits**

Instrumental methods of analytical chemistry, primarily optical methods. Laboratory work in visible, ultraviolet and infrared spectrophotometry, chromatography—column, paper thin layer and gas. Chemical microscopy and emission spectroscopy.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 242 Quantitative Chemistry**

**CH 251 Organic Chemistry** **5 Credits**

Basic principles of organic chemistry, employing the reaction mechanisms and transition state considerations. Structure and reactivity, alkanes, free radicals, alkenes, carbonium ion theory, electrophilic addition, alkynes, dienes, resonance, electrophilic aromatic substitutions, arenes, alkyl halides and  $SN_1$  vs.  $SN_2$ ,  $E_1$  vs.  $E_2$ . Laboratory stresses basic techniques of reactions, separations and isolations.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 112 Chemistry**

**CH 252 Organic Chemistry** **5 Credits**

A continuation of the study of additional classes of organic compounds followed by a study of tautomerism, stereochemistry, carbohydrates, proteins and dyes in terms of modern structural theory. Properties are linked to structure by a study of reaction rates, equilibrium, transition state and activation energy, reaction mechanisms, resonance and orbital theories.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 251 Organic Chemistry**

**CH 253 Organic Chemistry** **5 Credits**

The identification of organic compounds by correlation of fundamental properties, and the behavior of organic compounds with their structures. Preparation and properties of polymers.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 252 Organic Chemistry**

**CH 261 Stoichiometry** **4 Credits**

A first course in chemical engineering background. Application of chemistry, physics and mathematics in solving engineering problems. Special emphasis on dealing with material and energy balances and the solution of problems.

**4 Class Hours**

**Prerequisites: CH 112 Chemistry and MA 140 Algebra and Trigonometry**

## **CH 262 Unit Operations**

**4 Credits**

A theoretical treatment of the basic unit operations of chemical engineering, including fluid flow, heat transfer, evaporation. Laboratory experimentation is conducted in the above areas using pilot plant size equipment. **3 Class Hours, 3 Laboratory Hours**

**Prerequisite: CH 261 Stoichiometry**

## **CH 263 Unit Operations**

**5 Credits**

A theoretical treatment of the basic unit operations of chemical engineering, including evaporation, distillation, drying, gas absorption and filtration. Laboratory experimentation is conducted in the above areas using pilot plant size equipment.

**3 Class Hours, 6 Laboratory Hours**

**Prerequisite: CH 262 Unit Operations**

# **CIVIL TECHNOLOGY**

## **CT 110 Architectural Drawing**

**1 Credit**

Development of working drawings for residential construction, including floor plans, elevations, sections, details, mechanical and electrical layouts. **3 Laboratory Hours**

**Prerequisite: MT 110 Engineering Drawing**

## **CT 119 Plain Concrete**

**3 Credits**

A study of cements, aggregates and plain concrete, including the testing of cements and aggregates, the design, mixing, testing, placing, curing control and inspection of plain concrete. ASTM and AASHTO standards. Introduction to bituminous concrete.

**2 Class Hours, 3 Laboratory Hours**

## **CT 140 Surveying**

**5 Credits**

Plane surveying including distance measurement, note keeping, compass surveying, leveling, angle measurement, care and use of instruments, stadia, plane table topography, traversing, coordinates, area computation, mapping. **3 Class Hours, 6 Laboratory Hours**

**Prerequisite: MA 140 Algebra and Trigonometry**

## **CT 141 Surveying**

**4 Credits**

Continuation of CT 140 Surveying, including observation of meridian, triangulation, land surveys, horizontal and vertical control, photogrammetry.

**2 Class Hours, 6 Laboratory Hours**

**Prerequisite: CT 140 Surveying**

## **CT 153 Strength of Materials**

**4 Credits**

Study of stress and strain, elasticity, shear and moment in beams, stresses in beams, torsion, combined stresses, mechanical properties of structural materials. Laboratory work includes mechanical tests on wood, concrete and metals conducted in accordance with ASTM and AASHTO standards.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites: MT 155 Applied Mechanics and**

**MA 141 Analytic Geometry and Calculus**

## **CT 211 Architectural Drawing**

**1 Credit**

Continuation of CT 110 Architectural Drawing including cabinet details, plot plans and architectural rendering. Emphasis on the development of perspective drawings.

**3 Laboratory Hours**

**Prerequisite: CT 110 Architectural Drawing**



- CT 212 Architectural Drawing** **1 Credit**  
 Development of a complete set of working drawings for a small commercial building including floor plans, elevations, sections, details, mechanical and electrical layouts, window and door schedules. Term project. **3 Laboratory Hours**  
**Prerequisite:** CT 211 Architectural Drawing
- CT 220 Reinforced Concrete Design** **4 Credits**  
 Fundamental behavior of reinforced concrete, both elastic and inelastic. Design, analysis, and detailing of rectangular beams, T-beams, beams reinforced for compression, columns and footings. Major emphasis is on ultimate strength design methods. An integrated design and detailing project. **3 Class Hours, 3 Laboratory Hours**  
**Prerequisite:** CT 254 Strength of Materials
- CT 221 Structural Steel Design** **4 Credits**  
 Fundamental theory and principles necessary for design of simple steel structures. Design, investigation and detailing of beams, columns, tension and compression members and their connections, composite beams. An integrated design and detailing project. **3 Class Hours, 3 Laboratory Hours**  
**Prerequisite:** CT 220 Reinforced Concrete Design
- CT 230 Building Design** **4 Credits**  
 A study of building materials, manufacturing processes and construction methods. Application of architectural design principles to institutional type buildings. Term project. **3 Class Hours, 3 Laboratory Hours**  
**Prerequisite:** CT 250 Estimating and Construction Planning
- CT 250 Estimating and Construction Planning** **4 Credits**  
 A systematic approach to estimating building project costs combined with a study of construction management and the critical path method of scheduling. **3 Class Hours, 3 Laboratory Hours**  
**Prerequisite:** CT 212 Architectural Drawing
- CT 254 Strength of Materials** **3 Credits**  
 A continuation of CT 153 Strength of Materials including deflection of beams, analysis of statically indeterminate restrained and continuous beams. Columns, selected topics, design of timber members. **3 Class Hours**  
**Prerequisite:** CT 153 Strength of Materials
- CT 260 Hydraulics** **3 Credits**  
 Basic course in hydraulics including properties of fluids, hydrostatics, fluid motion flow in or through orifices, nozzles, pipes, weirs, open channels, hydraulic machinery, and application and limitations of selected design aids. **3 Class Hours**  
**Prerequisite:** MA 142 Analytic Geometry and Calculus
- CT 270 Soil Mechanics** **4 Credits**  
 Origin and nature of soil, soil density, sampling, soil water, flow nets and seepage forces. Classification, frost action, stabilization, stress, consolidation, settlement, shearing strength, stability, embankments, dams, retaining walls, piles and underground conduits. The laboratory covers ASTM and AASHTO specifications used in classifying and predicting behavior of soils. **3 Class Hours, 3 Laboratory Hours**  
**Prerequisite:** CT 153 Strength of Materials
- CT 273 Environmental Sanitation** **4 Credits**  
 Environmental sanitation including water supplies and treatment, sewerage and sewage treatment, unit operations and refuse sanitation. Laboratories include field trips, design problems in plants, distribution and collection systems. **3 Class Hours, 3 Laboratory Hours**

**CT 274 Environmental Sanitation 3 Credits**

Communicable diseases, biological and chemical aspects of water and sewerage treatment, air pollution and industrial wastes.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite: CH 104 Chemistry**

**CT 283 Route Surveying and Highway Design 4 Credits**

Simple and compound curves, vertical curves, spirals and earthwork. Selected topics in route selection, field technique, route design, construction and maintenance. Computer applications. Term project.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites: CT 141 Surveying and**

**MA 142 Analytic Geometry and Calculus**

## **DENTAL HYGIENE**

**DH 100 Dental Hygiene and Ethics 2 Credits**

History of dental hygiene. Ethical practice, dental jurisprudence and proper oral hygiene technique.

**2 Class Hours**

**DH 101 Dental Manikin Practice 3 Credits**

Removal of simulated deposits and accretions on the teeth of manikins by use of dental instruments. Proper scaling and polishing techniques, toothbrushing and general mouth cleanliness are stressed.

**1 Class Hour, 4 Laboratory Hours**

**Prerequisites: DH 100 Dental Hygiene and Ethics and DH 140 Dental Anatomy and BI 171 Anatomy and Physiology**

**DH 103 Clinical Dental Hygiene 2 Credits**

Clinical application of DH 101 Dental Manikin Practice.

**1 Class Hour, 3 Laboratory Hours**

**Prerequisites: DH 101 Dental Manikin Practice and DH 141 Dental Anatomy and BI 172 Anatomy and Physiology**

**DH 121 Hygiene 2 Credits**

The various factors (physical, social, psychological) which affect the total health status of the individual, and the effective application of sound health principles in solving health problems.

**2 Class Hours**

**DH 140 Dental Anatomy 3 Credits**

Lecture and laboratory study of the gross anatomy of the maxilla, mandible, individual teeth. The significance of the foregoing to dental physiology and the rendering of a dental prophylaxis.

**2 Class Hours, 2 Laboratory Hours**

**DH 141 Dental Anatomy 3 Credits**

Continuation of DH 140 Dental Anatomy.

**2 Class Hours, 2 Laboratory Hours**

**Prerequisite: DH 140 Dental Anatomy**

**DH 158 Dental Office Practice 3 Credits**

General dental office procedures, psychology of patient relations, dental assisting and operating room procedure, and the importance to the dental hygienist of being a member of the dental health team.

**2 Class Hours, 2 Laboratory Hours**

## DH 204 Clinical Dental Hygiene

4 Credits

Dental prophylaxes performed on patients, mouth inspection, topical application of fluorides, home care instruction to the patient. Practice in dental assisting, sterilizing techniques. Classroom instruction in dental health education to elementary and secondary school students.

**1 Class Hour, 12 Laboratory Hours**

**Prerequisites: All Dental Hygiene and Biology Courses in Terms 1, 2 & 3**

## DH 205 Clinical Dental Hygiene

4 Credits

Continuation of DH 204 Clinical Dental Hygiene.

**1 Class Hour, 12 Laboratory Hours**

**Prerequisite: DH 204 Clinical Dental Hygiene**

## DH 206 Clinical Dental Hygiene

4 Credits

Continuation of DH 205 Clinical Dental Hygiene.

**1 Class Hour, 12 Laboratory Hours**

**Prerequisite: DH 205 Clinical Dental Hygiene**





**DH 244 Preventive Dentistry****3 Credits**

Preventive methods for maintaining the health of the mouth and control of dental caries. Detailed studies of the latest methods of caries control through laboratory tests, diet and fluoridation. Study of teeth not in normal occlusion, classification and probable factors causing orthodontic conditions. Introduction to abnormal oral conditions found in children, with possible methods of treatment or correction.

**3 Class Hours**

**Prerequisites:** BI 176 Dental Histology and  
DH 141 Dental Anatomy and BI 159 Microbiology

**DH 251 Dental Radiography****2 Credits**

Proper use of the X-ray machine and accessories. Exposure, development and mounting of dental films. Procedures to safeguard the patient and operator from hazards of radiation. Understanding of the use of X-ray in clinical practice of dentistry.

**1 Class Hour, 2 Laboratory Hours**

**Prerequisites:** DH 103 Clinical Dental Hygiene and DH 141 Dental Anatomy and  
BI 172 Anatomy and Physiology

**DH 252 Clinical Dental Radiography****1 Credit**

Clinical application of principles and practices learned in DH 251 Dental Radiography.

**2 Laboratory Hours****Prerequisite:** DH 251 Dental Radiography**DH 253 Clinical Dental Radiography****1 Credit**

Continuation of DH 252 Clinical Dental Radiography.

**2 Laboratory Hours****Prerequisite:** DH 252 Clinical Dental Radiography**DH 254 General Pathology****2 Credits**

A broad picture of the disease process through a study of common general diseases, their causes, results, treatment. Emphasis on the principles of inflammation, healing and repair.

**2 Class Hours**

**Prerequisites:** BI 159 Microbiology and BI 176 Dental Histology  
and BI 172 Anatomy & Physiology

**DH 255 Oral Pathology****2 Credits**

Oral diseases, their causes, recognition and treatment, with particular emphasis on the application of the principles covered in DH 254 General Pathology.

**2 Class Hours****Prerequisite:** DH 254 General Pathology**DH 260 Dental Laboratory Practice****3 Credits**

An introduction to the restorative phase of dentistry. Dental laboratory procedures by lectures, demonstrations and actual processing of laboratory projects by students. History, property and use of various dental laboratory materials.

**2 Class Hours, 2 Laboratory Hours****Prerequisite:** DH 141 Dental Anatomy**DH 261 Nutrition****3 Credits**

Basic nutrition, essential nutrients, requirements and recommended allowances. The role of dietary intake in an individual's dental health.

**3 Class Hours**

**Prerequisites:** CH 102 Chemistry and BI 172 Anatomy and Physiology  
and BI 176 Dental Histology

**DH 267 Anesthesia****2 Credits**

Principles of general and local anesthetics and patient management.

**2 Class Hours**

**Prerequisites:** All preceding DH and BI courses in Terms 1, 2, 3 and 4

**DH 268 Special Dental Practice 3 Credits**

Various specialty practices in dentistry: periodontia, prosthetics, orthodontics, endodontics, exodontics, oral surgery and maxio-facial surgery. Nature, procedure, differences in types of practices and the role of the dental hygienist in each practice.

**3 Class Hours**

**Prerequisites: All preceding DH and BI courses in Terms 1, 2, 3, 4 and 5**

**DH 283 Dental Health Education 3 Credits**

Areas and principles for patient instruction in professional and personal care procedures.

**3 Class Hours**

**Prerequisites: All preceding DH and BI courses in Terms 1 and 2**

**DH 284 Dental Pharmacology 3 Credits**

The action of drugs, their sources, properties, preparation, administration. The mathematics of pharmacy and prescription writing. Therapy of oral conditions.

**3 Class Hours**

**Prerequisites: BI 172 Anatomy and Physiology and BI 159 Microbiology**

**DH 287 Public Health 2 Credits**

An over-all picture of public health (history, philosophy, environmental sanitation, structure, services) with emphasis on community dental health. Field trips to various health agencies.

**2 Class Hours**

## **ENVIRONMENTAL HEALTH TECHNOLOGY**

**EH 101 Environmental Health 2 Credits**

History, development, and philosophy of environmental health with emphasis on its social foundations.

**2 Class Hours**

**EH 102 Environmental Health 3 Credits**

Principles of environmental disease control and their application to the environment. Field trips to various facilities to observe control principles in actual use.

**2 Class Hours, 3 Laboratory Hours**

**EH 103 Milk Sanitation 4 Credits**

Application of sanitary principles to the production, processing and distribution of milk and milk products. Milk codes and inspection procedures. Field trips to farms and processing plants. **Must be taken concurrently with BI 250 Microbiology.**

**3 Class Hours, 3 Laboratory Hours**

**EH 201 Atmospheric Pollution Control 4 Credits**

Air pollution in relation to public health. Sources and classification of pollutants, pollution meteorology, sampling and measuring techniques, principles and methods employed in control.

**3 Class Hours, 3 Laboratory Hours**

**EH 202 Community Sanitation 4 Credits**

Urban environmental health problems including refuse sanitation and disposal methods, rodent identification and control methods, principles of healthful housing and housing codes.

**3 Class Hours, 3 Laboratory Hours**

**EH 203 Food Sanitation 4 Credits**

Sanitation in the processing, storage, distribution and serving of food including regulations and inspection procedures.

**3 Class Hours, 3 Laboratory Hours**  
**Prerequisite: EH 103 Milk Sanitation**

**EH 204 Water Supply and Pollution Control 4 Credits**

Development, treatment, distribution of water supplies including development and protection of water sources, principles and methods of water treatment, treatment plant operation and maintenance.

**3 Class Hours, 3 Laboratory Hours**  
**Prerequisite: BI 106 Limnology**

**EH 205 Water Supply and Pollution Control 4 Credits**

Collection, treatment, disposal of liquid wastes including composition of sanitary and industrial wastes, principles and methods of treatment and disposal, treatment plant operation and maintenance.

**3 Class Hours, 3 Laboratory Hours**  
**Prerequisite: EH 204 Water Supply & Pollution Control**

**EH 206 Radiological Health 3 Credits**

Sources and characteristics of radiation including X-ray generating equipment, principles of radiation biology, principles of radiation protection, radiation regulations and inspection procedures.

**2 Class Hours, 3 Laboratory Hours**  
**Prerequisite: PH 110 Radiation Physics**

**EH 207 Environmental Health Administration 2 Credits**

Organization, programs and services of public health departments, legal aspects of public health activities, fundamentals of effective public relations.

**1 Class Hour, 2 Laboratory Hours**

## **ELECTRICAL TECHNOLOGY**

**ET 101 Manufacturing Processes 2 Credits**

Manufacturing processes related to the electrical industry to provide a basic knowledge in bench operations and tool operations involving the use of the lathe, drill press, vertical end mill, band saw, engraving machine and power hacksaw. Practice and study of oxyacetylene and arc welding.

**1 Class Hour, 3 Laboratory Hours**

**ET 102 Electrical Construction and Maintenance 2 Credits**

First in a sequence of courses to familiarize the student with general trade practices and the acquiring of basic manipulative skills. Experience in the installation and maintenance of electrical equipment. Training in the different types of wiring systems used in industry and homes, trouble-shooting and repair of electrical equipment. Study and practice of fabrication methods used in the electrical industry, National Electrical Code rules and shop safety practices.

**1 Class Hour, 3 Laboratory Hours**

**ET 103 Electrical Construction and Maintenance 1 Credit**

Continuation of ET 102 Electrical Construction and Maintenance, with emphasis on (1) the practical installation of basic wiring circuits used in home and industry, (2) trouble-shooting and repair of fractional horsepower motors, (3) wiring and testing of various electronic projects, including printed circuit techniques. **3 Laboratory Hours**



- ET 104 Industrial Safety and First Aid 2 Credits**  
 Introduction to industrial safety problems. Emphasis on hazards the engineering technician is likely to encounter and the steps needed to minimize resultant dangers. The first aid techniques described are based on up-to-date information for the immediate care of accident victims.  
**2 Class Hours**
- ET 110 Physics (Fundamentals for Electricity) 5 Credits**  
 Dimensional, vector and graphical analysis of basic physical concepts, establishing a foundation for the study of electrical principles. **4 Class Hours, 3 Laboratory Hours**
- ET 111 Physics (Electricity and Magnetism) 5 Credits**  
 Parameters and components of electrical circuits founded upon electric and magnetic field concepts.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 110 Physics**
- ET 112 Semiconductor Fundamentals 4 Credits**  
 Investigation of electrical phenomena within solids, gases and vacuum devices based upon a study of the extra nuclear structure and selected topics of physical electronics.  
**4 Class Hours**  
**Prerequisite: ET 110 Physics**
- ET 120 Electrical Circuits 5 Credits**  
 Application of circuit parameters to DC, single and polyphase circuits involving the use of vector algebra and elementary circuit laws.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 111 Physics**
- ET 127 Electricity 4 Credits**  
 Beginning of a two-term sequential course of applied electrical concepts emphasizing DC circuitry and an introduction to electrical machinery.  
**3 Class Hours, 3 Laboratory Hours**  
**Prerequisite: PH 142 Physics**
- ET 128 Electricity 4 Credits**  
 A continuation of ET 127 Electricity with emphasis on AC circuitry, measurements, power distribution, transformers and AC machines.  
**3 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 127 Electricity**
- ET 129 Electronics 4 Credits**  
 An applied electronics course with related laboratory experiments. An introduction to the theory and operation of electronic components, with emphasis on their applications.  
**3 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 128 Electricity**
- ET 130 Engineering Drawing 1 Credit**  
 Principles of parallel projection. Development of drafting skills to include lettering and proper line construction.  
**3 Laboratory Hours**
- ET 131 Engineering Drawing 1 Credit**  
 Shop processes and procedures to facilitate the understanding of drafting practices. Tolerancing, representation of threads and fasteners, preparation of assembly drawings.  
**3 Laboratory Hours**  
**Prerequisite: ET 130 Engineering Drawing**

### ET 141 Electricity

3 Credits

Basic course in applied electricity as related to the construction industry. Distribution system, lighting system, heating, motors, generators. Laboratory includes general trade practices, National Electric Code and safety.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisite: MA 140 College Algebra and Trigonometry**

### ET 223 Network Analysis

4 Credits

Analysis of complex electrical and electronic networks by the application of Kirchhoff's laws, Thevenin's theorem, Norton's theorem, superposition, vector loci methods, loop and nodal analysis, transfer function techniques. The computer is used as an analytical tool where feasible.

**4 Class Hours**

**Prerequisite: ET 120 Electrical Circuits**

### ET 230 Electrical Design

1 Credit

Application of electrical drafting principles to the planning of power layout and lighting design. Manufacturer's catalogs, charts, and the National Electrical Code form essential reference material. Lists of materials and schedules are prepared as parts of each project.

**3 Laboratory Hours**

**Prerequisite: ET 131 Engineering Drawing**

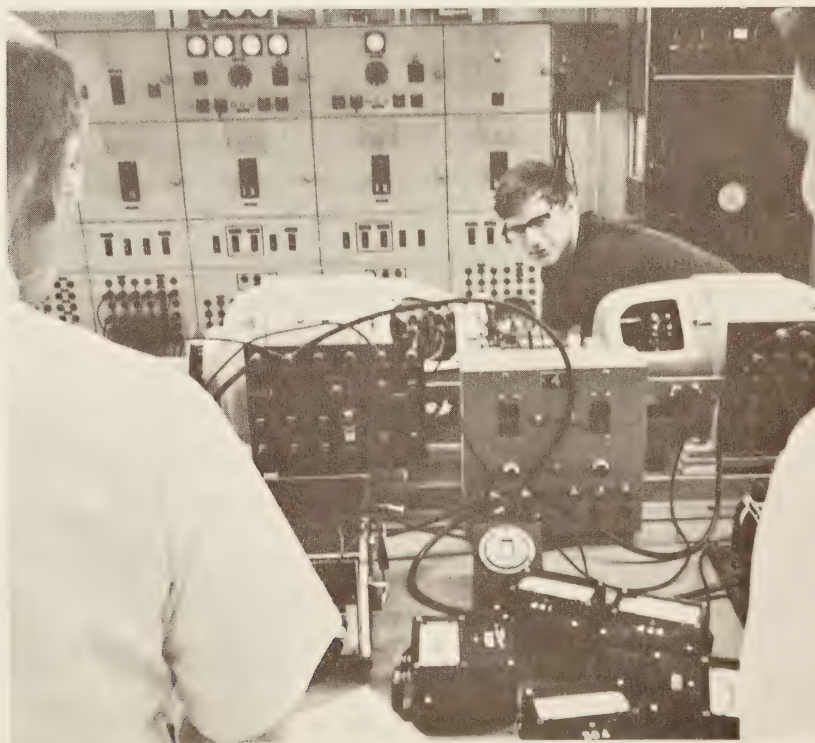
### ET 231 Electrical Design

1 Credit

Electrical drafting in the field of electronics. A study of symbols, conventions, layout procedures and circuit sequence that comprises an electronic circuit. Individual student projects.

**3 Laboratory Hours**

**Prerequisite: ET 230 Electrical Design**



- ET 232 Electrical Design** **1 Credit**  
 Circuit symbols and types of diagrams used in control mechanisms. Discussions of the principles of control devices, their construction and operation. Individual student problems.  
**3 Laboratory Hours**  
**Prerequisite: ET 231 Electrical Design**
- ET 240 Electrical Machines** **5 Credits**  
 Theory, operation, application of DC machines and their manual, magnetic and solid state control. Introduction to single and polyphase silicon diode and thyristor rectifiers, their design, characteristics, and applications.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 120 Electrical Circuits**
- ET 241 Electrical Machines** **5 Credits**  
 Basic theory of single phase and polyphase transformers. Principles of operation and control of AC machines and solid state inverters.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 240 Electrical Machines**
- ET 242 Automatic Controls** **5 Credits**  
 Principles of open and closed loop systems and the theory, operation, application of industrial equipment used in control systems. Associated laboratory permits examination, operation, trouble-shooting of these control devices.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 241 Electrical Machines**
- ET 250 Electronics** **5 Credits**  
 Introduction to electronic building blocks. Characteristics of semiconductor and vacuum devices. Multi-element and special types of active devices.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisites: MA 141 Analytic Geometry and Calculus, ET 111 Physics and ET 112 Semiconductor Fundamentals**
- ET 251 Electronics** **5 Credits**  
 Use of electronic building blocks. Semiconductor and vacuum devices in functioning circuitry. Prediction and analysis of performance.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 250 Electronics**
- ET 252 Electronics** **5 Credits**  
 Behavior of large signal devices, graphical analysis, application of feedback, sinusoidal oscillators, wave shaping, non-sinusoidal oscillators.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: MA 142 Analytic Geometry and Calculus and ET 251 Electronics**
- ET 253 Electronics** **5 Credits**  
 Cascaded circuits. Circuits with feedback over several stages, power supplies, counters, functional devices.  
**4 Class Hours, 3 Laboratory Hours**  
**Prerequisite: ET 252 Electronics**
- ET 257 Introduction to System Logic** **3 Credits**  
 Logical analysis—application to analog, digital and non-computer areas. Mathematical methods for analysis of computer logic and computer-type problems. Study of building blocks, sub-system and system operations. Periodical laboratory exercises and demonstrations.  
**3 Class Hours**  
**Prerequisite: MA 142 Analytic Geometry and Calculus (Non-Electrical Technology students need faculty approval)**



**ET 261 Organization and Management 3 Credits**

Principles, functions and coordination of industrial organization. Management, costs, product development, marketing, methods analysis, work measurement, plant layout, material handling, production and inventory control.

**3 Class Hours**

**ET 262 Industrial Relations 3 Credits**

Analysis and study of the principles, concepts and techniques of industrial relations. Emphasis on the personnel function as an important area of industrial relations. Guidance and counsel to students in finding and selecting suitable employment as well as long-range vocational goals in Electrical Technology.

**3 Class Hours**

**ET 263 Engineering Economics 3 Credits**

A fundamental course in engineering economics for Electrical Technology students. Aspects of component selection and purchase, equipment maintenance and comparison of various plant operations. Engineering depreciation calculation, along with the treatment of estimates in economy analysis and classifications of engineering cost.

**3 Class Hours**

**LIBERAL ARTS**

**LA 101, 102, 103 Beginning Spanish 4 Credits**

Basic principles of grammar and syntax. Emphasis on oral practice in classroom, supplemented by work in audio-lingual laboratory. Reading of graded literary texts.

**4 Class Hours, 1 Laboratory Hour**

**Prerequisite: LA 101 Spanish for LA 102**

**LA 102 Spanish for LA 103**

**LA 110, 111, 112 Beginning French 4 Credits**

Basic principles of grammar and syntax. Emphasis on oral practices in classroom, supplemented by work in audio-lingual laboratory. Reading of graded literary texts.

**4 Class Hours, 1 Laboratory Hour**

**Prerequisite: LA 110 French for LA 111**

**LA 111 French for LA 112**

**LA 119, 120, 121 Beginning German 4 Credits**

Basic principles of grammar and syntax. Emphasis on oral practice in classroom, supplemented by work in audio-lingual laboratory. Reading of graded literary texts.

**4 Class Hours, 1 Laboratory Hour**

**Prerequisite: LA 119 German for LA 120**

**LA 120 German for LA 121**

**LA 130 English Composition 3 Credits**

Introduction to the nature and history of language. Instruction and practice in the writing of short, expository compositions. The tools and techniques of the research paper.

**3 Class Hours**

**LA 131 English Composition 3 Credits**

Continued expository theme writing. Instruction and practice in argumentation, description and narration. Study of tone and other aspects of style through analysis of selected essays.

**3 Class Hours**

**Prerequisite: LA 130 English Composition**

- LA 132 English Composition** **3 Credits**  
Critical and evaluative writing based on ideas suggested by the study of selected pieces of literature. **3 Class Hours**  
**Prerequisite: LA 131 English Composition**
- LA 145 Development of Western Civilization** **3 Credits**  
Development of man from the dawn of history, through the classical civilizations of Greece and Rome, to the Middle Ages. **3 Class Hours**
- LA 146 Development of Western Civilization** **3 Credits**  
The late Middle Ages (1300) through the beginning of modern times, the age of royal absolutism, the expansion of Europe, and the era of the French Revolution to 1830. **3 Class Hours**
- LA 147 Development of Western Civilization** **3 Credits**  
The Industrial Revolution, development of nationalism, the beginning of liberalism, the growth of industrialism, the two World Wars and present-day tensions. Social and cultural trends of the period. **3 Class Hours**
- LA 193 Philosophy** **3 Credits**  
Methodology, the principles of deductive and inductive logic, epistemology. **3 Class Hours**
- LA 194 Philosophy** **3 Credits**  
The various systems of thought, including idealism, rationalism, theism, empiricism, positivism, pragmatism, scepticism, existentialism. **3 Class Hours**
- LA 195 Philosophy** **3 Credits**  
Ethics: moral values, rules of conduct and guides to action. Aesthetics: the science of beauty, the rules and principles of art. **3 Class Hours**
- LA 204 Intermediate Spanish** **3 Credits**  
Reading and discussion of cultural and historical texts. Continuation of grammar and syntax; aural comprehension and oral practice in classroom and audio-lingual laboratory. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 103 Beginning Spanish**
- LA 205 Intermediate Spanish** **3 Credits**  
Intensive and extensive reading of literary works of recognized authors. Classroom discussion based on the texts. Conversation in Spanish, and supplemental practice in the audio-lingual laboratory. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 204 Intermediate Spanish**
- LA 206 Intermediate Spanish** **3 Credits**  
Continuation of LA 205 Intermediate Spanish. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 205 Intermediate Spanish**
- LA 207 Spanish Conversation and Composition** **3 Credits**  
Intensive drill in today's spoken Spanish. Practice in writing in the language. Use of audio-lingual laboratory to supplement classroom work. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 206 Intermediate Spanish**
- LA 208 Introduction to Spanish Literature** **3 Credits**  
Lectures, readings and discussions of masterpieces of Spanish literature from *Poema de mio Cid* to the 18th century. Voluntary use of audio-lingual laboratory to hear recordings of Spanish masterpieces. **3 Class Hours**  
**Prerequisite: LA 207 Spanish Conversation and Composition**

- LA 209 Introduction to Spanish Literature 3 Credits**  
 Further lectures, readings and discussions of representative Spanish works of the 18th, 19th and 20th centuries. Voluntary use of audio-lingual laboratory to hear recordings of Spanish masterpieces. **3 Class Hours**  
**Prerequisite: LA 208 Introduction to Spanish Literature**
- LA 213 Intermediate French 3 Credits**  
 Reading and discussion of cultural texts. Continuation of grammar, syntax and oral practice in classroom and audio-lingual laboratory. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 112 Beginning French**
- LA 214 Intermediate French 3 Credits**  
 Intensive and extensive reading of literary works of recognized authors. Continuation of grammar, syntax and oral practices in classroom and audio-lingual laboratory. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 213 Intermediate French**
- LA 215 Intermediate French 3 Credits**  
 Emphasis on composition, with continuation of grammar, syntax and oral practices in the classroom and audio-lingual laboratory. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 214 Intermediate French**
- LA 216 French Conversation and Composition 3 Credits**  
 Practice in oral and written French. Guided composition based on lessons in text. Conversational exercises and practice involving contemporary subjects of general and individual interest based on text. Dictation practice for comprehension. **3 Class Hours**  
**Prerequisite: LA 215 Intermediate French**
- LA 217 Introduction to French Literature 3 Credits**  
 Reading, lectures and reports on masterpieces of French literature with cultural and historical implications, from *La Chanson de Roland* through the 18th century. **3 Class Hours**  
**Prerequisite: LA 216 French Conversation and Composition**
- LA 218 Introduction to French Literature 3 Credits**  
 Further reading, lectures, reports on masterpieces of French literature with their implications, from the 18th century to modern times. **3 Class Hours**  
**Prerequisite: LA 217 Introduction to French Literature**
- LA 222 Intermediate German 3 Credits**  
 Emphasis on grammar with difficult problems of syntax and translation. Conversation with audio-lingual laboratory work. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 121 Beginning German**
- LA 223 Intermediate German 3 Credits**  
 Further drill in grammar and composition. Conversation with audio-lingual laboratory work. Introduction to original texts of standard authors. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 222 Intermediate German**
- LA 224 Intermediate German 3 Credits**  
 Reading and discussion of original texts of standard authors with cultural and historical implications. Use of audio-lingual laboratory to hear recordings of masterpieces. **3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 223 Intermediate German**



- LA 225 German Conversation and Composition 3 Credits**  
 Readings in German civilization and culture, oral and written reports and discussion in German. Special attention to the modern German idiom.  
**3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 224 Intermediate German**
- LA 226 Introduction to German Literature 3 Credits**  
 Readings and discussions of representative selections in German literature from the Old High German period to the 18th century. Lectures and reports.  
**3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 225 German Conversation and Composition**
- LA 227 Introduction to German Literature 3 Credits**  
 Further readings and discussions of representative selections in German literature with emphasis on great masters from the 18th century to modern times. Lectures and reports.  
**3 Class Hours, 1 Laboratory Hour**  
**Prerequisite: LA 226 Introduction to German Literature**
- LA 233 English Literature 3 Credits**  
 The history and development of the English novel as a literary form. Reading and discussion of representative English novels from Fielding's *Joseph Andrews* to Conrad's *Lord Jim* with attention to both themes and structures.  
**3 Class Hours**  
**Prerequisite: LA 132 English Composition**
- LA 234 English Literature 3 Credits**  
 English dramatic literature from the Middle Ages to 1900. Emphasis on dramatic techniques and the historical, social and intellectual climate of the time.  
**3 Class Hours**
- LA 235 English Literature 3 Credits**  
 English non-dramatic poetry from Chaucer to Eliot. Metrics and versification. Analysis of sounds, words, symbols, images, metaphors and tone in selected poems of various forms and types.  
**3 Class Hours**
- LA 236 Literature of the Western World: Classical and Christian Backgrounds 3 Credits**  
 Greek, Roman and medieval Christian writing and its influence on Western culture.  
**3 Class Hours**
- LA 237 Literature of the Western World: Fiction 3 Credits**  
 Representative works from the Renaissance to the present.  
**3 Class Hours**
- LA 238 Literature of the Western World: Dramatic Literature 3 Credits**  
 Representative selections dating from the Renaissance with an emphasis on the period from Realism to the Theatre of the Absurd.  
**3 Class Hours**
- LA 248 History of Latin America 3 Credits**  
 Pre-Columbian Latin America, the Spanish and Portuguese conquests and the Colonial Period.  
**3 Class Hours**
- LA 249 History of Latin America 3 Credits**  
 Latin America's wars of independence and the economic and cultural development of the nineteenth century.  
**3 Class Hours**

### **LA 250 History of Latin America**

**3 Credits**

The major Latin American nations in the 20th century in terms of political, economic and social institutions and problems.

**3 Class Hours**

### **LA 255 Economics**

**3 Credits**

Introduction to the principles and problems of macro-economics. Economic reasoning and the American economic system, national income determination, business fluctuations, fiscal policy and the public debt.

**3 Class Hours**

### **LA 256 Economics**

**3 Credits**

Continuation of macro-economics. Money and banking, monetary policy, economic stability and growth. Introduction to the principles and problems of micro-economics. Theory of prices and allocations of resources. Theory of the firm from competition to monopoly and connecting government policy.

**3 Class Hours**

**Prerequisite: LA 255 Economics**

### **LA 257 Economics**

**3 Credits**

Distribution theory, rents, interest, profits. General equilibrium theory, current economic problems, international economics, the underdeveloped countries, comparative economic systems.

**3 Class Hours**

**Prerequisite: LA 256 Economics**

### **LA 277 Anthropology**

**3 Credits**

Physical anthropology. Human evolution against the background of primate evolution using genetics, comparative anatomy, and the fossil and archaeological records.

**3 Class Hours**



- LA 278 Anthropology** **3 Credits**  
 Cultural and social anthropology. Analysis of institutions, such as technology and economics, kinship, politics and religion, and of language and culture, using non-Western societies as illustrations. **3 Class Hours**  
**Prerequisite: LA 277 Anthropology**
- LA 279 Anthropology** **3 Credits**  
 Comparative social systems. A comparison of types of social systems, such as the band tribe, kingdom, and nation-state, with emphasis on cultural evolution and culture change, using data from both Western and non-Western societies. **3 Class Hours**  
**Prerequisite: LA 278 Anthropology**
- LA 280 Sociology** **3 Credits**  
 Sociological facts and principles dealing with the scientific study of human relationships. Emphasis on analysis and study of culture and human society, socialization, groups and group structure. **3 Class Hours**
- LA 281 Sociology** **3 Credits**  
 Stratification, collective behavior patterns and the various social institutions including associations, the family, and education. The application of sociological principles relating to the agents of social change. **3 Class Hours**  
**Prerequisite: LA 280 Sociology**
- LA 282 Sociology** **3 Credits**  
 The structure of the aggregates of population, minority groupings, crime and delinquency, and major changes in technology, urbanism and political structures as they relate to man. **3 Class Hours**  
**Prerequisite: LA 281 Sociology**
- LA 286 Psychology** **3 Credits**  
 Definition and history of psychology as a science, including systems, fields, methodology. Structure and function of the brain and nervous system, psychogenetics, development of the individual, motivation and emotion. **3 Class Hours**
- LA 287 Psychology** **3 Credits**  
 Sensation, perception, learning, memory, individual differences and their measurement. **3 Class Hours**  
**Prerequisite: LA 286 Psychology**
- LA 288 Psychology** **3 Credits**  
 Ability testing and intelligence, theories of personality, conflict and adjustment, disordered behavior, therapies, mental health. **3 Class Hours**  
**Prerequisite: LA 287 Psychology**
- LA 801 English** **3 Credits**  
 Introduction to the nature and history of language. Semantics. Levels of usage. The construction of effective sentences and paragraphs. Critical reading of related essays. (Formerly GE 101.) **3 Class Hours**
- LA 802 English** **3 Credits**  
 Instruction and practice in the different types of writing including informative, evaluative and persuasive. Style, tone and diction, and their relationship to the writer's purpose. Critical reading of related essays. (Formerly GE 102.) **3 Class Hours**  
**Prerequisite: LA 801 English**



**LA 803     English     3 Credits**

The reading of prose selections dealing philosophically with man and his views of the world. Development of analytical reading, critical thinking and effective communication. (Formerly GE 103.)

**3 Class Hours**

**Prerequisite: LA 802 English**

**LA 804     Effective Speaking     3 Credits**

Speech communication through voice, words and action. Voice production, diction, platform presence. Organization of ideas. Practice in presenting speeches of different types. (Formerly GE 104.)

**3 Class Hours**

**LA 805     American Literature     3 Credits**

Fiction by important American writers of the last one hundred years. Emphasis on the novel and short story as art forms presenting significant ideas about the individual and society. (Formerly GE 105.)

**3 Class Hours**

**LA 810     Psychology     3 Credits**

Principles of psychology as they relate to the problems of human behavior and adjustment. Emphasis on growth and development, motivation, emotions, learning, individual differences, behavior disorders, personality and mental hygiene. (Formerly GE 110.)

**3 Class Hours**

**LA 820     Economics     3 Credits**

Economic facts and principles and their application to the American society. Emphasis on macro-economics: production, consumption, fiscal policy, national income analysis, money and banking. Current economic problems encompassing large-scale enterprise, labor-management relations, international trade, and a comparison of capitalism with other economic systems. (Formerly GE 120.)

**3 Class Hours**

**LA 830     Sociology     3 Credits**

Human groups, their activities, interrelationships, forces influencing them, and the influence of groups upon individuals and society. Emphasis on the foundations of society, our cultural environment, the family, the growth of the individual within the social framework, social progress. (Formerly GE 130.)

**3 Class Hours**

**LA 840     Introduction to Philosophy     3 Credits**

Basic problems of philosophy, such as *a priori* knowledge, the reality of the physical world, morality, the mind-body relationship, freedom, the supernatural. (Formerly GE 140.)

**3 Class Hours**

**LA 850     Political Science     3 Credits**

American government explored specifically through the Supreme Court, civil liberties, political parties, bureaucracy and generally through the development of the framing fathers' accomplishments. (Formerly GE 150.)

**3 Class Hours**

**LA 858     Fine Arts: Introduction to Art     3 Credits**

Basic art principles and concepts together with their historical development as shown in representative works of painting, sculpture and architecture. Gallery visits.

**3 Class Hours**

**LA 859     Fine Arts: Introduction to Theatre     3 Credits**

Art of the theatre, for the purpose of increasing understanding and appreciation of drama. A cultural approach considering the interrelationship of all aspects of production including plays, acting, directing, costume, make-up and lighting. Attendance at local productions.

**3 Class Hours**

- LA 860 Fine Arts: Introduction to Music** 3 Credits  
 Basic elements of music common to all forms of musical expression. Emphasis on developing listening habits, which bring the student to an informed awareness and understanding of music. Attendance at concerts and recitals. (Formerly GE 160.)  
**3 Class Hours**
- LA 861 17th and 18th Century Music** 3 Credits  
 Music and musical styles of the 17th and 18th centuries. Emphasis upon the composers and their styles and the relationship of music to the social, political and other cultural reforms of the period. (Formerly GE 161.)  
**3 Class Hours**  
**Prerequisite: LA 860 Fine Arts: Introduction to Music or consent of instructor**
- LA 862 19th Century Music** 3 Credits  
 Important musicians and musical styles of the Romantic Period. Emphasis upon the developments in piano literature, the symphony orchestra and opera. Listening to selected recordings and attendance at local concerts form an integral part of the discussions. (Formerly GE 162.)  
**3 Class Hours**  
**Prerequisite: LA 860 Fine Arts: Introduction to Music or consent of instructor**
- LA 863 20th Century Music** 3 Credits  
 Important musicians and musical styles in the 20th century. Emphasis upon the trends and development of music in America as well as a study of leading European composers. (Formerly GE 163.)  
**3 Class Hours**  
**Prerequisite: LA 860 Fine Arts: Introduction to Music or consent of instructor**

## **MATHEMATICS**

- MA 100 Mathematics** 3 Credits  
 Fundamental operations of real numbers, evaluation of algebraic expressions, operations with polynomials, solutions of linear equations, inequalities, factoring, operations with radicals, the quadratic formula.  
**3 Class Hours**
- MA 101 Mathematics** 3 Credits  
 Operations with fractions, fractional equations, functional relationships, fractional and negative exponents, scientific notation, logarithms, variation.  
**3 Class Hours**  
**Prerequisite: MA 100 Mathematics**
- MA 105 Mathematics** 3 Credits  
 Summarization of data, fundamentals of probability distributions, normal distribution, mean and standard deviation.  
**3 Class Hours**  
**Prerequisite: MA 100 or MA 101 Mathematics**
- MA 110 Fundamentals of Mathematics** 3 Credits  
 Logic and set theory, Venn-Euler diagrams, Boolean algebras, the number system, modular systems, real numbers, logarithms.  
**3 Class Hours**
- MA 111 Fundamentals of Mathematics** 3 Credits  
 Factoring, quadratic and irrational equations, systems of equations, inequalities, matrices, determinants, permutations and combinations.  
**3 Class Hours**  
**Prerequisite: MA 110 Fundamentals of Mathematics**

- MA 112 Fundamentals of Mathematics** **3 Credits**  
 Analytic geometry, linear programming, trigonometric functions, triangles, sequences, limits, derivatives, indefinite and definite integration. **3 Class Hours**  
**Prerequisite: MA 111 Fundamentals of Mathematics**
- MA 130 Modern Algebra** **3 Credits**  
 The natural numbers. Sets, variables and statement forms. Mappings and operations, groups, relations and partitions. **3 Class Hours**
- MA 131 Modern Algebra** **3 Credits**  
 Construction of integers from natural numbers, properties of integers, integral domains and factorization, construction and properties of rational numbers, groups and fields. **3 Class Hours**  
**Prerequisite: MA 130 Modern Algebra**
- MA 132 Modern Algebra** **3 Credits**  
 Isomorphisms and automorphisms of groups, cyclic groups, construction and properties of real numbers. Rings, ideals and homomorphisms, matrix theory, determinants and vector spaces. **3 Credits**  
**Prerequisite: MA 131 Modern Algebra**
- MA 140 Algebra and Trigonometry** **4 Credits**  
 Topics in algebra and trigonometry necessary in technical courses: system of real numbers, functions in general, graphs of functions, complex numbers, theory of equations, systems of equations, permutations and combinations, binomial theorem, as well as exponential, logarithmic and trigonometric functions. **4 Class Hours**
- MA 141 Analytic Geometry and Calculus** **3 Credits**  
 Rectangular coordinates in a plane, the straight line, slope and inclination, equations of curves, discussion of a curve, functions and limits, indeterminate forms, continuity, the derivative, differentiation of algebraic functions. **3 Class Hours**  
**Prerequisite: MA 140 Algebra and Trigonometry**
- MA 142 Analytic Geometry and Calculus** **3 Credits**  
 Applications of derivatives, maxima and minima, differentials, indefinite integral, definite integral, applications of definite integral. Area between curves, volumes by cylindrical washers and shells, length of plane curve, centroid and second moment of area, moment of inertia. **3 Class Hours**  
**Prerequisite: MA 141 Analytic Geometry and Calculus**
- MA 160 Analytic Geometry and Calculus** **4 Credits**  
 Rectangular coordinates in a plane, length of a line, slope, angle between lines, variables and constants, equations and loci. The straight line, discussion of the equations of a locus, derivation of equation of a locus, functions and limits, increments of functions, continuity, derivative of a function. Differentiation of algebraic functions, explicit and implicit differentiation, inverse functions, successive differentiation, tangents and normals to plane curves. Accelerations, increasing and decreasing functions, maxima and minima of functions of one variable, inflection points, differentials. Rolle's Theorem, mean value theorem, Newton's method for solving equations. **4 Class Hours**





### **MA 161 Analytic Geometry and Calculus**

**4 Credits**

Indefinite integral, change of variable in integration, definite integral, area under a curve, work done by a variable force. Fundamental theorem of integral calculus, mean-value theorem for integrals, plane areas, volume by cylindrical discs and cylindrical shells. Lengths of curve, centroid of area, centroid of solid, moment of inertia. Conics: circle, ellipse, parabola, hyperbola. Trigonometric functions, inverse trigonometric functions, exponential functions, logarithmic functions, hyperbolic functions, derivatives of transcendental functions.

**4 Class Hours**

**Prerequisite:** MA 160 Analytic Geometry and Calculus

### **MA 162 Analytic Geometry and Calculus**

**4 Credits**

Polar coordinates, parametric equations, curvilinear motion, curvature of plane curves. Integration by standard forms, by parts and by trigonometric substitution. Partial fractions, reduction formulas, table of integrals. Improper integrals, indeterminate forms, parametric equations of a curve, vectors in the plane, scalars, dot product, vector functions, curvilinear motion, cartesian coordinates in three-space, direction cosines, quadric surfaces.

**4 Class Hours**

**Prerequisite:** MA 161 Analytic Geometry and Calculus

### **MA 170 Analytic Geometry and Calculus**

**4 Credits**

Inequalities in one and two variables, functions and graphs, the line and linear inequalities. Theorems on limits and continuity, limits at infinity, sequences. Differentiation of algebraic functions, implicit functions, maxima and minima, related rates. Integration, area and work, pressure, changes of variable. Trigonometric and inverse trigonometric functions. Conics.

**4 Class Hours**

- MA 171 Analytic Geometry and Calculus** 4 Credits  
 Trigonometric and exponential functions, their derivatives and integrals, inverse functions, logarithmic functions, hyperbolic functions. Parametric equations, arc length, polar coordinates. Vectors, formulas and methods of integration, some applications of integration. **4 Class Hours**  
**Prerequisite:** MA 170 Analytic Geometry and Calculus
- MA 172 Analytic Geometry and Calculus** 4 Credits  
 Applications of integration, solid analytic geometry, vectors in three dimensions, infinite series. **4 Class Hours**  
**Prerequisite:** MA 171 Analytic Geometry and Calculus
- MA 240 Analytic Geometry and Calculus** 3 Credits  
 The conic sections, general and standard equations of conics, transformation of coordinates, differentiation of transcendental functions. Hyperbolic functions, polar coordinates, parametric equations, velocity and acceleration in curvilinear motion, curvature of plane curves. **3 Class Hours**  
**Prerequisites:** MA 142 Analytic Geometry and Calculus and permission of student's department chairman
- MA 241 Analytic Geometry and Calculus** 3 Credits  
 Integration by standard forms, integration by parts, trigonometric substitution, partial fractions, use of table of integrals, applications of definite integrals. Trapezoidal and parabolic approximation, improper integrals, indeterminate forms, infinite series, expansion of functions in series. **3 Class Hours**  
**Prerequisite:** MA 240 Analytic Geometry and Calculus
- MA 242 Analytic Geometry and Calculus** 3 Credits  
 Solid analytic geometry, partial derivatives, multiple integrals, elementary differential equations, first order differential equations, integrable combinations, exact differentials, linear differential equations of first order, second order differential equations, homogeneous equations of second order, method of undetermined coefficients. **3 Class Hours**  
**Prerequisite:** MA 241 Analytic Geometry and Calculus
- MA 260 Analytic Geometry and Calculus** 3 Credits  
 Vectors in three-dimensional space, partial differentiation, multiple integrals, infinite series, Taylor's Formula. **3 Class Hours**  
**Prerequisite:** MA 162 Analytic Geometry and Calculus
- MA 261 Differential Equations** 3 Credits  
 Solution of first order equations, geometric interpretation of first order equations, existence of solutions, applications of first order equations. Solution of homogeneous and nonhomogeneous linear equations of first and second order. **3 Class Hours**  
**Prerequisite:** MA 260 Analytic Geometry and Calculus
- MA 262 Differential Equations** 3 Credits  
 The algebra of operators, the operators  $D$ , use of the operator  $D$  to solve linear equations and systems of linear equations. Solution of equations by infinite series methods. **3 Class Hours**  
**Prerequisite:** MA 261 Differential Equations
- MA 270 Analytic Geometry and Calculus** 4 Credits  
 Partial differentiation, multiple integrals, linear algebra. Directional derivatives, gradient and geometric interpretation. Cylindrical and spherical coordinates. **4 Class Hours**  
**Prerequisite:** MA 172 Analytic Geometry and Calculus

**MA 271 Differential Equations****3 Credits**

The differential equations, separation of variables, homogeneous equations, linear first order equations, integrating factors, Bernoulli's equation, orthogonal and trajectories, hyperbolic functions, linear differential equations, differential operators, nonhomogeneous equations, undetermined coefficient, inverse differential operators, the exponential shift.

**3 Class Hours****Prerequisite: MA 270 Analytic Geometry and Calculus****MA 272 Differential Equations****3 Credits**

Existence of solutions, equations of order one and higher degree, special equations of order two power series solutions, hypergeometric types, numerical methods, partial differential equations, orthogonal sets, Fourier Series, boundary value problems.

**3 Class Hours****Prerequisite: MA 271 Differential Equations**

## **MEDICAL RECORD TECHNOLOGY**

**MR 102 Medical Terminology****3 Credits**

Medical terminology as correlated with anatomical systems. Suffixes, prefixes and use of medical dictionaries. Introduces filing and preserving records.

**2 Class Hours, 2 Laboratory Hours****MR 103 Terms and Transcription****4 Credits**

Continuation of MR 102 Medical Terminology. Types of medical reports and correspondence, use of dictionaries and reference books.

**2 Class Hours, 4 Laboratory Hours****Prerequisites: MR 102 Medical Terminology and  
BI 172 Anatomy and Physiology****MR 104 Record Procedures****2 Credits**

Orientation to various methods of filing medical records. Preservation of medical records. Ownership and use of the medical record, both as a personal and impersonal document. Development of skills in being a receptionist and in handling the registration of patients.

**1 Class Hour, 2 Laboratory Hours****Prerequisite: BI 100 Ethics and Orientation****MR 224 Medical Record Science****4 Credits**

Analysis of medical records. Use of medical records in the improvement of medical care. Preparation and value of various administrative and clinical data.

**3 Class Hours, 3 Laboratory Hours****Prerequisites: MR 103 Terms and Transcription and MA 105 Mathematics****MR 225 Medical Record Science****4 Credits**

Standard nomenclature and international classification, required or recommended indexes and registers, methods of efficient medical information storage and retrieval.

**3 Class Hours, 3 Laboratory Hours****Prerequisite: MR 224 Medical Record Science**



## **MR 226 Medical Record Science**

**4 Credits**

Legal aspects of record keeping, departmental organization, layout and management. Inter-and-intra-departmental relations and duties. The medical library: organization and classification system. Staff relations and duties. Accrediting agencies. Evaluation seminar.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: MR 225 Medical Record Science**

## **MR 244, 245, 246 Medical Record Hospital**

**4 Credits**

Directed practical experience in the hospital and related affiliation sites. Correlated with lecture and laboratory classes to develop insight and skills into medical record procedures.

**16 Laboratory Hours**

**Prerequisite: MR 103 Terms and Transcription**

# **MECHANICAL TECHNOLOGY**

## **MT 101 Engineering Drawing**

**1 Credit**

A basic drafting course designed to orient the student in lettering, measurements, line work, use of instruments, sketching, orthographic projection. Exploratory work in the areas of dimensioning and notes, sections, auxiliaries and assemblies. Use of catalogs, printed data sheets.

**3 Laboratory Hours**

## **MT 103 Engineering Drawing**

**2 Credits**

Basic course that includes line and instrument exercises, lettering, orthographic projection, dimensioning and notes, auxiliary views, sections, threads and fasteners, assembly drawings and sketching.

**6 Laboratory Hours**

## **MT 104 Engineering Drawing**

**1 Credit**

A basic drawing course for Chemical Technology students. Sketching, lettering, use of instruments, orthographic projection, auxiliary views, piping diagrams, flow charts and engineering graphs.

**3 Laboratory Hours**

## **MT 110 Engineering Drawing**

**1 Credit**

Basic course that includes lettering, line and instrument exercises, orthographic projection, dimensioning and notes, auxiliary views and sections.

**3 Laboratory Hours**

## **MT 111 Engineering Drawing and Descriptive Geometry**

**2 Credits**

Basic rules and practice for drawing threads, fasteners and assemblies including sketching techniques. Principle of descriptive geometry designed to determine true lengths, true size and relationships between lines and surfaces, to find intersections, to ascertain clearances, and to decide relationships affecting the design of parts in a machine or structure.

**1 Class Hour, 3 Laboratory Hours**

**Prerequisite: MT 110 Engineering Drawing**

## **MT 112 Descriptive Geometry**

**2 Credits**

Basic principles of descriptive geometry designed to determine true relationships between lines and surfaces, to find intersections, to locate elements or tangents, to ascertain clearances, or to decide relationships affecting the design of parts in a machine or structure.

**1 Class Hour, 2 Laboratory Hours**

**Prerequisite: MT 103 Engineering Drawing**

**MT 129 Survey of Engineering Laboratories 2 Credits**

A general survey of engineering materials, physical tests and manufacturing processes encountered in the mechanical technology laboratories. Lectures with demonstrations in these laboratories: machine shop, processes, precision measurement, strength of materials, thermodynamics, metallurgy.

**1 Class Hour, 3 Laboratory Hours**

**MT 130 Manufacturing Processes 3 Credits**

Basic manufacturing materials and processes, such as melting and casting metal, powder metallurgy, plastics, elementary aspects of metal cutting machine tools. Practice and study of oxyacetylene, arc, resistance welding.

**2 Class Hours, 2 Laboratory Hours**

**MT 131 Manufacturing Processes 2 Credits**

Elements of machine tool operation involving the use of the lathe, miller, shaper, drill press and fundamental bench operations. Study of cutting speeds, feeds, coolants, threads, tapers and tool grinding.

**1 Class Hour, 3 Laboratory Hours**

**Prerequisites:** MT 130 Manufacturing Processes and MA 140 Algebra and Trigonometry and MT 110 Engineering Drawing

**MT 132 Manufacturing Processes 2 Credits**

Continuation of MT 131 Manufacturing Processes plus operations of the surface grinder and the cylindrical grinder, advanced lathe operations, jig boring, gear cutting, lapping, honing and scraping. Practice and study of turret lathe and automatic screw machine operations.

**1 Class Hour, 3 Laboratory Hours**

**Prerequisite:** MT 131 Manufacturing Processes

**MT 135 Materials and Processes 4 Credits**

Advanced study of the properties and applications of engineering materials and the processes involved in their utilization, including electrical discharge machining, tape-controlled milling and drilling, and ultrasonic machining.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites:** MT 130 Manufacturing Processes and MT 165 Metallurgy and MT 257 Strength of Materials

**MT 155 Applied Mechanics (Statics) 3 Credits**

Free body diagram, trusses, spatial force systems, friction, centroids, moments of inertia, shear and moment diagrams.

**3 Class Hours**

**Prerequisites:** MA 140 Algebra and Trigonometry and PH 140 Physics

**MT 156 Applied Mechanics (Dynamics) 3 Credits**

Forces and force systems as they influence the motion of solid and fluid bodies. Kinematics, kinematics of rigid bodies, kinetics, work and energy, impulse-momentum, mechanical vibrations.

**3 Class Hours**

**Prerequisites:** MA 141 Analytic Geometry and Calculus and MT 155 Applied Mechanics

**MT 165 Metallurgy 4 Credits**

Fundamentals of the physical metallurgy of ferrous and nonferrous alloys, investigation of the physical properties of metals, hardness tests, thermal analysis, grain structure examination.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites:** PH 141 Physics and CH 104 Chemistry

## MT 220 Mechanical Design

3 Credits

Machine motion and basic mechanisms. Machine motion includes rectilinear and curvilinear displacement, velocity, acceleration. Basic mechanisms include linkages, cams, gears.

**2 Class Hours, 3 Laboratory Hours**

**Prerequisites:** MT 111 Engineering Drawing and Descriptive Geometry and MT 156 Applied Mechanics and MT 257 Strength of Materials

## MT 221 Mechanical Design

4 Credits

Principles of mechanical design covering the selection of materials, stress investigation, design of fundamental machine elements.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites:** MT 220 Mechanical Design and MT 132 Manufacturing Processes

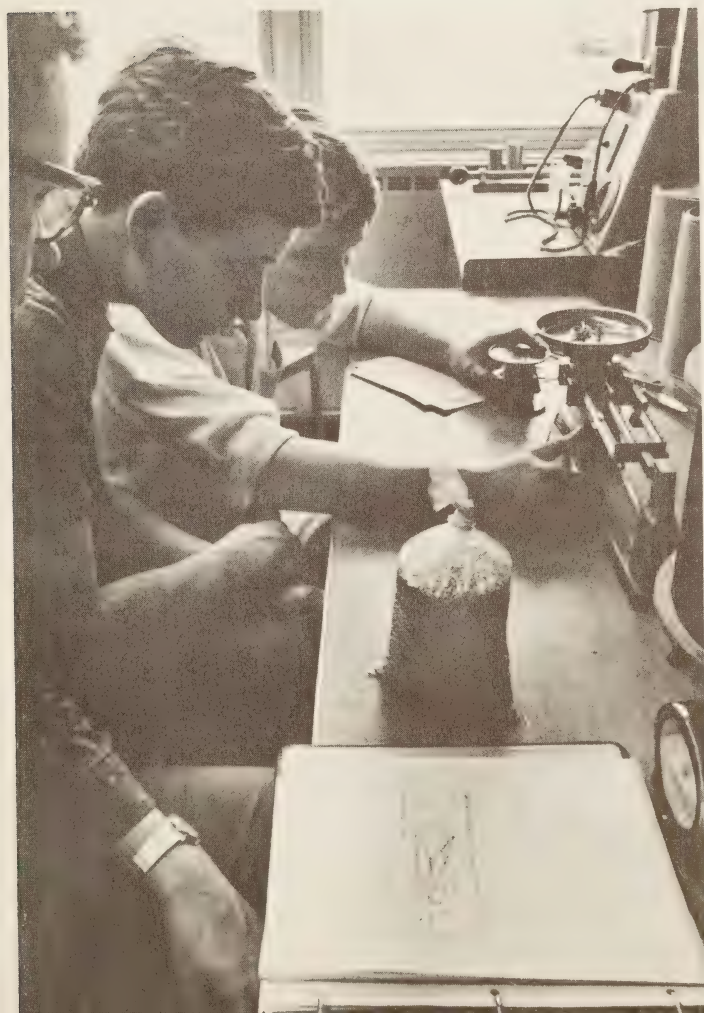
## MT 240 Precision Measurement

2 Credits

Theory and practice of precision measurement of the dimensional character of manufactured parts. Measurement of physical quantities such as time, mass, temperature, flow, pressure and speed which are utilized in the control of physical systems.

**1 Class Hour, 3 Laboratory Hours**

**Prerequisites:** MT 132 Manufacturing Processes and PH 142 Physics





## **MT 257 Strength of Materials**

**4 Credits**

Stress and strain, elasticity, torsion, welded joints, riveted joints, beam stresses, centroids, moments of inertia, shear and moment diagrams. Laboratory work includes strain gauges, tests on wood, metals and plastics conducted in accordance with ASTM and AASHTO standards.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites: MT 155 Applied Mechanics and  
MA 142 Analytic Geometry and Calculus**

## **MT 260 Thermodynamics**

**4 Credits**

Laws of thermodynamics and application to changes of state of gases. Properties of gases and the equation of state, property and energy relationships in gas processes and in gas cycles for power and refrigeration, performance of thermal apparatus employing gas processes. Laboratory experiments on thermal processes and apparatus.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites: AD 120 Fundamentals of Computer Programming and  
MT 261 Fluid Mechanics**

## **MT 261 Fluid Mechanics**

**3 Credits**

Behavior of compressible and non-compressible fluids under static and dynamic conditions, including principles of hydrostatics, pressure measurements, flow, flow measurement, viscosity, hydrodynamic power and force.

**3 Class Hours**

**Prerequisites: PH 141 Physics and MA 142 Analytic Geometry and Calculus and  
MT 156 Applied Mechanics**

## **MT 262 Thermodynamics**

**4 Credits**

Application of laws of thermodynamics to changes of state of vapors. Properties of vapors, property and energy relationships in vapor processes and in vapor cycles for power and refrigeration, performance of thermal apparatus employing vapors. Heat transfer. Laboratory experiments on fluid flow and thermal processes and apparatus.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisite: MT 260 Thermodynamics**

## **MT 267 Statistical Quality Control**

**4 Credits**

Probability and statistics as they relate to sampling theory and the control of quality in the manufactured product. Standard deviation, areas under, and ordinates of the normal curve, the Poisson, control charts. Single, double and sequential sampling plans, machine capability, product reliability, statistical dimensioning.

**3 Class Hours, 2 Laboratory Hours**

**Prerequisites: MT 240 Precision Measurement and  
MA 142 Analytic Geometry and Calculus**

## **MT 270 Engineering Materials**

**3 Credits**

Atomic structure, metallic phases, ceramic materials and properties, multi-phase materials and equilibrium relationships, reactions within solid materials, corrosion, oxidation, composite materials.

**3 Class Hours**

**Prerequisites: PH 172 Physics (Electricity and Magnetism) and  
CH 135 Chemistry**

## **MT 271 Engineering Materials**

**3 Credits**

Mechanical tests, elastic properties, microplasticity of materials, plastic deformation, fracture, strengthening mechanisms. Ceramics and inorganic non-metals, polymers.

**3 Class Hours**

**Prerequisite: MT 270 Engineering Materials**

## **PHYSICAL EDUCATION**

### **PE 101 Physical Education for Modern Living 1 Credit**

A course to familiarize students with the need for and benefits of physical activity in modern living. A self-evaluation of one's physical condition and potential. Guidance in the selection of physical activities for leisure time use. The development and maintenance of physical fitness.

**2 Class Hours**

### **PE 102, 103 Physical Education 1 Credit PE 204, 205, 206**

Instruction in a variety of carry-over sports, such as archery, badminton, bowling, golf, horseshoes, tennis, weight training. Participation and rudimentary instruction in football, soccer, basketball, volleyball, softball, tumbling, free exercise, field hockey, wrestling, physical conditioning and first aid.

Note: Students enrolled in Physical Education must wear a regulation gym uniform, which can be purchased at the College Book Store.

**2 Class Hours**

## **PHYSICS**

### **PH 101 Physical Science 3 Credits**

The Solar System: The Ptolemaic system of the universe, basic astronomical observations, the Copernican System, the Solar System.

Force and Motion: Newton's Laws of Motion, gravitation, work and energy.

Molecules and Energy: Concepts of heat and temperature, gaseous state of matter. The kinetic molecular theory of ideal gases.

**2 Class Hours, 2 Laboratory Hours**

### **PH 102 Physical Science 3 Credits**

Electrical Nature of Matter: Electrostatics, current, electricity and magnetism.

Structure of Matter: Wave motion, theories of light, spectra, Faraday's laws, divisibility of the atom, Bohr theory, X-rays, atomic number, electronic configuration of the elements.

Energy within Atomic Nuclei: Natural radioactivity, nuclear energy, fission and fusion, the universe beyond the solar system.

**2 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 101 Physical Science**

### **PH 106 Physics 3 Credits**

Mechanics: Vectors, the laws of motion, energy and momentum, fluids at rest and in motion, gravitation.

Heat and Sound: Temperature and expansion, heat and its transfer, kinetic theory of gases, change of phase, wave motion and sound.

**2 Class Hours, 2 Laboratory Hours**

### **PH 107 Physics 3 Credits**

Electricity and Magnetism: Electrostatics, electric currents, magnetism, electronics. Light: Reflection and refraction, lenses and mirrors, optical instruments, wave nature of light.

Modern Physics: Energy quantum, Bohr atom, matter waves, the nucleus and radioactive decay.

**2 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 106 Physics**

**PH 110 Physics (Radiation) 3 Credits**

Photon and charged-particle interactions with matter, radioactive processes, neutrons, activation analysis, theory and operation of radiation detecting instruments, basic criteria for radiation measurement, radiation hazards and protection.

**2 Class Hours, 2 Laboratory Hours**

**Prerequisites: MA 101 Mathematics and PH 106 Physics**

**PH 113 Physical Science 4 Credits**

The Solar System: The Ptolemaic System of the universe, basic astronomical observations, the Copernican System, the Solar System.

Force and Motion: Newton's Laws of Motion, gravitation, work and energy.

Molecules and Energy: Concepts of heat and temperature, gaseous state of matter, kinetic molecular theory of ideal gases. **3 Class Hours, 2 Laboratory Hours**

**PH 114 Physical Science 4 Credits**

Molecules and Energy: Basic laws and theories in chemistry, atoms and molecules, the periodic table.

Electrical Nature of Matter: Electrostatics, current, electricity and magnetism.

Structure of Matter: Wave motion, theories of light, spectra, Faraday's laws, divisibility of the atom, Bohr theory, X-rays, atomic number, electronic configuration of the elements. **3 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 113 Physical Science**

**PH 115 Physical Science 4 Credits**

Atomic Structure and Chemical Combination: Electronic theory of bonding, oxidation and reduction, solutions, ionic theory, acid-base reactions, chemical energy, carbon chemistry.

Matter and Energy in the Study of the Earth: Rocks and minerals, natural energy transformations, weathering and erosion.

Energy Within Atomic Nuclei: Natural radioactivity, nuclear energy, fission and fusion, the universe beyond the solar system. **3 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 114 Physical Science**

**PH 140 Physics (Mechanics) 4 Credits**

Composition and resolution of vectors, equilibrium, concurrent and nonconcurrent forces, friction, statics, kinematics and linear motion, projectile motion, curvilinear motion, work and energy. **3 Class Hours, 2 Laboratory Hours**

**PH 141 Physics (Mechanics, Heat and Sound) 4 Credits**

Power, impulse and momentum, oscillatory motion, fluid mechanics, thermometry, thermal expansion, thermodynamics, change of phase, heat transfer. Wave motion, intensity and quality of sound waves. **3 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 140 Physics**

**PH 142 Physics (Electricity and Magnetism; Light) 4 Credits**

Coulomb's Law, electric fields, potential energy and potential, DC and AC circuits, conduction in solid liquids and gases. Photometry, geometrical optics, refraction and reflection, nature of light. **3 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 141 Physics**

**PH 160 Physics 4 Credits**

Introductory classical physics—mechanics, vectors, kinematics, dynamics, Kepler's Law, Newton's Law of Gravitation, conservation of momentum, energy, kinetic theory of heat. **3 Class Hours, 2 Laboratory Hours**



## PH 161 Physics

4 Credits

Introductory classical physics—kinetic theory and electromagnetic phenomena; hydrostatics, ideal gas law, kinetic theory of heat; charge, Coulomb's Law, fields, potentials, currents, simple DC circuits, vacuum tubes, electromagnetic waves, geometrical and physical optics.

**3 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 160 Physics**

## PH 162 Physics

4 Credits

Introductory modern physics—relativity, quantum mechanics, atomic theory, structure of matter, nuclear physics, particle physics.

**3 Class Hours, 2 Laboratory Hours**

**Prerequisite: PH 161 Physics**

## PH 170 Physics (Mechanics)

4 Credits

Statics and dynamics: vectors, particle kinematics, motion in a plane, particle dynamics, Newton's Laws of Motion, friction, centripetal forces. Work energy, impulse and momentum, principles of conservation of energy and momentum, collision phenomena, rotational kinematics, torque, rotational dynamics of rigid body.

**Concurrent enrollment in MA 170 Analytic Geometry and Calculus required.**

**3 Class Hours, 3 Laboratory Hours**

## PH 171 Physics (Mechanics and Heat)

4 Credits

Oscillations, gravitation, fluid statics and dynamics, waves in elastic media. Temperature, calorimetry, heat transfer, fusion, vaporization, elementary thermodynamics and kinetic theory.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites: PH 170 Physics and MA 170 Analytic Geometry and Calculus**

## PH 172 Physics (Electricity and Magnetism)

4 Credits

Fundamental laws of electric and magnetic fields with application to elementary circuit problems. Electrostatic fields, induced emfs, inductance, capacitance, dielectrics, steady currents, simple transients. Laboratory work consists of electrostatic, electromagnetic and circuit measurements.

**3 Class Hours, 3 Laboratory Hours**

**Prerequisites: PH 171 Physics and MA 171 Analytic Geometry and Calculus**



**PH 192 Statics****4 Credits**

Concepts of forces, moments and couples in static force systems through a vector approach.

**4 Class Hours****Prerequisites: PH 171 Physics and MA 172 Analytic Geometry and Calculus****PH 210 Electrical Circuits****4 Credits**

Basic electrical terminology and circuit components: Kirchhoff's Laws, charge and current relationships. Circuit equations: theorem for linear circuits, energy equations, oscillatory responses. Complex algebra: definitions of operations, Euler's theorem. Steady alternating current: instantaneous, average and RMS values of circuit parameters, phasors. Two terminal networks: network elements, series-parallel networks, admittance and impedance, ladder method. Resonance: half-power points, "Q" of a coil, parallel and series circuits. Three terminal networks: wye and delta substitutions, impedance formulae.

**3 Class Hours, 3 Laboratory Hours****Prerequisites: PH 172 Physics and MA 270 Analytic Geometry and Calculus****PH 211 Electrical Circuits****4 Credits**

Network equations: branch equations, loop equations, node equations. Solution of network equations: driving point, and transfer impedances, matrix solutions. Coupled circuits and transformers. Network theorems: superposition theorem, reciprocity theorem, substitution theorem, Millman's theorem. Fourier series. Exponential Fourier series and the Fourier integral: Fourier transform pair, the LaPlace transform. The LaPlace transformation: LaPlace transform pair, tables of transform pairs, circuit solutions, partial fractions, initial value theorem, inverse transformation.

**3 Class Hours, 3 Laboratory Hours****Prerequisites: PH 210 Electrical Circuits and  
MA 270 Analytic Geometry and Calculus****PH 270 Physics (Light and Sound)****4 Credits**

Wave motion as applied to sound and acoustical phenomena. Geometrical optics, optical parts, optical instrumentation. Physical optics, nature of light, interferometry, polarization of light.

**3 Class Hours, 3 Laboratory Hours****Prerequisites: PH 172 Physics and MA 172 Analytic Geometry and Calculus****PH 271 Physics (Atomic)****4 Credits**

Special theory of relativity, quantum description of waves and particles, models of the atom, elementary quantum mechanics. The quantized atom, the Pauli exclusion principle, Zeeman effect, elementary molecular physics.

**3 Class Hours, 3 Laboratory Hours****Prerequisites: PH 172 Physics and MA 270 Analytic Geometry and Calculus****PH 272 Physics (Nuclear)****4 Credits**

Nucleons and nuclear force, binding energy and stability of nuclei, nuclear models, radioactive growth and decay laws, natural radioactivity, decay modes. Nuclear accelerators, low-energy nuclear reactions, fission and fusion, cosmic rays and elementary particles.

**3 Class Hours, 3 Laboratory Hours****Prerequisite: PH 271 Physics or equivalent****PH 280 Astronomy****4 Credits**

Fundamentals of astronomy including the earth's motion, earth satellites, the planets and the solar system, stellar structure and the sidereal universe. The laboratory will stress some practical aspects of astronomy, the use of the telescope and observing techniques.

**3 Class Hours, 3 Laboratory Hours****Prerequisite: MA 142 Analytic Geometry and Calculus**

## **PH 290 Dynamics**

**4 Credits**

Introduction to vector calculus, vectors in curvilinear coordinate systems. Particle motion, particle dynamics, harmonic forces, force fields, the two body problem. Relative motion, dynamics of plane systems, impulse-momentum theorems and energy theorems for the rigid body.

**4 Class Hours**

**Prerequisite:** PH 192 Statics

## **NURSING**

### **RN 121 Fundamentals of Nursing**

**6 Credits**

Introduction to basic nursing skills and components of nursing care common for all patients.

**4 Class Hours, 6 Laboratory Hours**

### **RN 123 Nursing (Material and Child Health)**

**6 Credits**

Beginning of the life cycle, starting with the newborn, through young adulthood. Normal growth and development and the normal maternal cycle. Principles and practices of nursing care related to the individual from conception through maturity. Appropriate clinical experiences and field trips as they apply to maternal and child health nursing.

**4 Class Hours, 6 Laboratory Hours**

**Prerequisite:** RN 121 Fundamentals of Nursing

### **RN 124 Nursing (Basic Physical and Mental Illness)**

**6 Credits**

Continuation of the life cycle. Normal problems of the adult and geriatric individuals. Nursing intervention and diagnosis. Emphasis on community health problems and ways in which facilities are utilized in relation to the aging process. Appropriate clinical experiences and field trips.

**4 Class Hours, 6 Laboratory Hours**

**Prerequisite:** RN 123 Nursing

### **RN 224 Nursing (Physical and Mental Illness)**

**10 Credits**

Continuing introduction to community problems and ways in which facilities are utilized. Nursing care of patients with disease entities including acute and chronic or long-term conditions and mental illness. Appropriate clinical experiences and field trips.

**6 Class Hours, 12 Laboratory Hours**

**Prerequisites:** RN 124 Nursing and BI 172 Anatomy and Physiology

### **RN 225 Nursing (Physical and Mental Illness)**

**10 Credits**

Continues health problems in medical, surgical, psychiatric and community nursing.

**6 Class Hours, 12 Laboratory Hours**

**Prerequisite:** RN 224 Nursing

### **RN 226 Nursing (Physical and Mental Illness)**

**10 Credits**

Continues health problems in medical, surgical, psychiatric and community nursing.

**6 Class Hours, 12 Laboratory Hours**

**Prerequisite:** RN 225 Nursing

### **RN 235 Trends in Nursing**

**1 Credit**

An integrated survey of the historical development, cultural heritage and social foundations in nursing. Study of professional organizations and responsibilities of the professional nurse. A discussion of modern day issues and problems facing nursing education and nursing service and the force of society affecting them.

**2 Laboratory Hours**



## **RN 236 Trends in Nursing**

**1 Credit**

A problem-solving approach to the nurse's responsibilities in meeting the needs of her profession as a member of a health team in a changing society. Discussion of community responsibilities of professional people.

**2 Laboratory Hours**

**Prerequisite:** RN 235 Trends in Nursing

## **X-RAY TECHNOLOGY**

### **XR 113 Physics (X-Ray Tube)**

**1 Credit**

X-ray tube physics, including preventive maintenance on component circuits and the accessories of an X-ray unit.

**1 Class Hour**

**Prerequisites:** PH 107 Physics and PH 110 Physics and

**XR 133 Radiological Science**

### **XR 121 Radiography**

**4 Credits**

Basic principles of radiographic exposure. Roentgenographic positioning. Dark room chemistry.

**Must be taken concurrently with XR 141 Hospital Radiographic**

**Technique.**

**3 Class Hours, 4 Laboratory Hours**

### **XR 122 Radiography**

**4 Credits**

Continuation of roentgenographic positioning and principles of radiographic exposure. Contrast media.

**Must be taken concurrently with XR 142 Hospital Radio-**

**graphic Technique.**

**3 Class Hours, 4 Laboratory Hours**

**Prerequisites:** XR 121 Radiography and XR 141 Hospital Radiographic Technique

### **XR 123 Radiography**

**3 Credits**

Continues XR 122 Radiography emphasizing roentgenographic positioning with and without contrast media.

**Must be taken concurrently with XR 143 Hospital**

**Radiographic Technique.**

**2 Class Hours, 4 Laboratory Hours**

**Prerequisites:** XR 122 Radiography and XR 142 Hospital Radiographic Technique

### **XR 124 Radiography**

**2 Credits**

Advanced techniques in roentgenographic positioning.

**Must be taken concu-**

**rently with XR 144 Hospital Radiographic Technique.**

**2 Class Hours**

**Prerequisites:** XR 123 Radiography and XR 143 Hospital Radiographic Technique

### **XR 131 Radiological Science**

**1 Credit**

Orientation to the field of X-ray Technology, including the history and nature of medicine and radiology. The need for and means of radiological protection. Patient care procedures used by the X-ray technician in various situations.

**2 Laboratory Hours**

### **XR 132 Radiological Science**

**1 Credit**

Personal, professional and legal responsibilities of the X-ray technician. An understanding of the physiology of diseased cells and tissues and the correlation necessary for efficient X-ray examinations. Theory and mechanisms of radiation protection.

**2 Laboratory Hours**

**Prerequisite:** XR 131 Radiological Science

### **XR 133 Radiological Science**

**1 Credit**

Biomedical aspects of the effects of ionizing radiation together with general and specialized techniques used for protection of patients and personnel.

**Must be taken**

**concurrently with PH 110 Physics.**

**1 Class Hour**

**Prerequisite:** XR 132 Radiological Science

## Radiographic Technique

Experience in the Radiology Department of a cooperating hospital. Observation and practice in positioning the sick and injured patient, obtaining the exact radiograph requested by the physician and assisting in the treatment of disease. Film exposure time, film manipulation and the finished radiograph are critically studied. Throughout the two academic years and summer sessions certain approved radiographs must be completed. These by location include radiographs of: extremities, gastrointestinal tract, urinary tract (intravenous and retrograde pyelograms, urethrograms), skull (sinuses, facial bones, mandible), spine, pelvis (hips, hipnailing), shoulder, thoracic cage and cavity (lungs and heart, sternum).

### XR 141, 142, 143 Hospital Radiographic Technique 4 Credits

Practice in positioning, radiographic exposure and film critique in the radiology department of a cooperating hospital.

**These three courses must be taken concurrently with XR 121, 122, 123 Radiography, respectively. 16 Laboratory Hours**

### XR 144 Hospital Radiographic Technique

Summer practice in radiographic technique and film critique at cooperating hospitals. **Must be taken concurrently with XR 124 Radiography.** A graduation requirement.

**1 Hour Film Critique and 36 Hours in Hospital X-ray Area**

**Prerequisites: XR 143 Hospital Radiographic Technique and XR 123 Radiography**

### XR 204 Anatomy (Topographic) 1 Credit

Radiological anatomy as depicted by a series of illustrated and applied lectures emphasizing surface landmarks and the relationship of organs to each other.

**Must be taken concurrently with XR 224 Radiography. 1 Class Hour**

**Prerequisites: BI 132 Zoology (Anatomy) and XR 124 Radiography and XR 144 Hospital Radiographic Technique**

### XR 224 Radiography 2 Credits

Problems and experiments related to manipulation of exposure factors. Advanced principles of radiographic exposure and construction of technique charts.

**Must be taken concurrently with XR 204 Anatomy (Topographic) and XR 244 Hospital Radiographic Technique. 1 Class Hour, 4 Laboratory Hours**

**Prerequisites: XR 124 Radiography and XR 144 Hospital Radiographic Technique**

### XR 225 Radiography 3 Credits

Specialized technical procedures in radiography including equipment, positioning and media.

**Must be taken concurrently with XR 245 Hospital Radiographic Technique. 2 Class Hours, 4 Laboratory Hours**

**Prerequisites: XR 224 Radiography and XR 244 Hospital Radiographic Technique**

### XR 234 Radiological Science 2 Credits

Problems seminar: general radiographic technique with film critique; special technique for pediatric radiography. The role of the technician in civilian emergencies.

**2 Class Hours**

**Prerequisites: XR 133 Radiological Science and XR 124 Radiography and XR 144 Hospital Radiographic Technique**

### XR 235 Radiological Science 2 Credits

Preparation for office management including departmental organization, function, supervision, protection, finances. Continuation of training in office procedures, intra- and inter-departmental relationships, policies, attitudes.

**2 Class Hours**

**Prerequisite: XR 234 Radiological Science**

- XR 236 Radiological Science** **2 Credits**  
 Advanced film critique. Pertinent current problems in radiography and special radiographic procedures including intra-oral radiography. **2 Class Hours**  
**Prerequisites:** XR 235 Radiological Science and XR 225 Radiography and XR 245 Hospital Radiographic Technique
- XR 237 Trends in Radiological Science** **3 Credits**  
 Preparation of the technical report and its organization for both written and oral presentation. Readings in current literature and journals of radiological science. **3 Class Hours**  
**Prerequisites:** XR 225 Radiography and XR 235 Radiological Science
- XR 238 Radiological Science** **2 Credits**  
 Continues XR 236—advanced film critique, current problems and special procedures. **2 Class Hours**  
**Prerequisite:** XR 236 Radiological Science
- XR 244, 245, 246 Hospital Radiographic Technique** **6 Credits**  
 Advanced practice in radiographic technique and film critique. **XR 244 and XR 245 must be taken concurrently with XR 224 and XR 225 Radiography, respectively.**  
**24 Laboratory Hours**  
**Prerequisites:** XR 144 Hospital Radiographic Technique and XR 124 Radiography
- XR 247 Hospital Radiographic Technique**  
 Summer practice in advanced radiographic technique and film critique. A graduation requirement. **1 Hour Film Critique and 36 Hours in Hospital X-Ray Area**  
**Prerequisite:** XR 246 Hospital Radiographic Technique
- XR 254 Radiotherapy** **2 Credits**  
 Effects of radiation on body tissue, protection practices and patient care. **2 Class Hours**  
**Prerequisites:** XR 133 Radiological Science and PH 110 Physics

## **GENERAL STUDIES CERTIFICATE COURSES**

- GS 101 Physical Science** **0 Credits**  
 Introductory course of a three-term sequence. The concept of dynamics and statics. Motion, forces, impulse and momentum, work and energy. **6 Class Hours**
- GS 102 Physical Science** **0 Credits**  
 Heat and the extension of the principle of conservation of energy, covering approximately one-half term. Then the course is divided into a three-hour course on theories of fields in electricity and magnetism, and a three-hour course on the structure of matter and an introduction to chemistry. **6 Class Hours**  
**Prerequisite:** GS 101 Physical Science
- GS 103 Physical Science** **0 Credits**  
 Further elaborations of fields and their applications, introductory quantum physics of light and matter, atomic structure and the nucleus. **3 Class Hours**  
**Prerequisite:** GS 102 Physical Science



**GS 110, 111, 112 Elements of Technical Mathematics 0 Credits**

A three-term sequence of integrated mathematics involving a mature treatment of the topics of algebra, trigonometry and some topics of analytic geometry. Special attention to technical computations using the slide rule, logarithms, science notation and dimensional analysis.

**5, 5, 5 Class Hours**

**GS 120 Technical Calculations 0 Credits**

Technical problem solving, applying principles and concepts of the students' concurrent courses in mathematics and GS 101 Physical Science.

**4 Laboratory Hours**

**GS 121 Technical Calculations 0 Credits**

Concurrent with GS 102 Physical Science. Problems involving heat and energy. At approximately mid-term the course is divided into two two-hour sessions emphasizing problems in chemistry and electricity, respectively.

**4 Laboratory Hours**

**Prerequisite: GS 120 Technical Calculations**

**GS 122 Technical Calculations 0 Credits**

Concurrent with GS 103 Physical Science. Problems involving theories of fields, elementary quantum theory, theories of atomic structure and the nucleus.

**2 Laboratory Hours**

**Prerequisite: GS 121 Technical Calculations**

**GS 130 Engineering Drawing 1 Credit**

Fundamentals of Engineering Drawing: simple multiview drawing and sketching, with stress on accuracy and neatness in lettering and linework.

**3 Laboratory Hours**

**GS 131 Engineering Drawing 1 Credit**

Orthographic projection, auxiliary views, sectional views, pictorial drawing, free hand drafting with continued emphasis on accuracy and neatness.

**3 Laboratory Hours**

**Prerequisite: GS 130 Engineering Drawing**

**GS 132 Engineering Drawing 1 Credit**

Developments and intersections, threads and fastenings, welding drawings, working drawings, exploded views. Continued emphasis on accuracy and neatness.

**3 Laboratory Hours**

**Prerequisite: GS 131 Engineering Drawing**

**GS 140 Chemistry 0 Credits**

Rudiments of electrochemistry, thermochemistry, solutions, atomic structure and bonding, descriptive coverage of the more common elements and families.

**3 Class Hours, 2 Laboratory Hours**

**Prerequisite: GS 102 Physical Science**

**GS 150, 151, 152 English 0 Credits**

A three-term sequence of courses designed to improve the student's mastery of language. Concentration on grammar, spelling, punctuation and the organization of ideas for effective expository writing. Development of reading skills: speed, comprehension, vocabulary building.

**3 Class Hours**

**GS 153, 154, 155 Verbal Reasoning 0 Credits**

A three-term sequence of courses designed to improve the student's ability in reasoning. Concentration on classifying, making generalizations, drawing conclusions, recognizing assumptions, distinguishing between cause and effect.

**3 Class Hours**

**Prerequisites: GS 153 Verbal Reasoning for GS 154**

**GS 154 Verbal Reasoning for GS 155**

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- FRANCIS LETAVISH  
X-ray Technology  
Licensed Technician
- IGNATIUS MADDI  
Dental Hygiene  
D.D.S., SUNY at Buffalo
- PAUL MARGARONE  
Dental Hygiene  
D.D.S., SUNY at Buffalo
- MARY R. MARPLE  
Nursing  
B.S., West Virginia Wesleyan College
- NILS NORDSTROM  
Dental Hygiene  
B.S., New York University  
M.D., Long Island College of Medicine  
D.D.S., Columbia University
- LAWRENCE PALMER  
X-ray Technology  
Licensed Technician
- HELEN PENNEY  
History and Social Sciences  
B.S., University of Illinois
- ALFONSO PERNA, JR.  
Dental Hygiene  
B.S., Holy Cross  
D.D.S., SUNY at Buffalo

ALFONSO PERNA, SR.

Dental Hygiene

D.D.S., University of Pittsburgh

D.D.S., SUNY at Buffalo

ELLEN B. PETRISKO

Engineering Science

B.A., Utica College of Syracuse  
University

GEORGE REJEBIAN

Dental Hygiene

B.A., SUNY at Binghamton

D.D.S., Georgetown University

Certificate in Orthodontics,  
Columbia University

LAWRENCE N. ROUFF

Dental Hygiene

D.D.S., University of Pennsylvania

Certificate in Orthodontics,  
University of Pennsylvania

STEPHEN SEDLAK

X-ray Technology

B.A., State University of Iowa

M.D., Marquette University School  
of Medicine

IRWIN SEIFE

X-ray Technology

M.D., Bowman-Gray School of  
Medicine

BARBARA A. SELIGA

Nursing

B.S., SUNY College at Plattsburgh

MARSHA S. STOCK

Bio-Medical Sciences

B.A., Hartwick College

JANICE E. ULANGCA

English and Humanities

B.M.E., Cornell College

M.M., Northwestern University

DOROTHY J. WALSH

Dental Hygiene

A.A.S., Broome Technical Community  
College

J. GLEZEN WATTS

Dental Hygiene

D.D.S., SUNY at Buffalo

RUTH WAXMAN

English and Humanities

A.B., M.A., University of California

JOSEPH ZEGER

Dental Hygiene

D.D.S., University of Illinois

LEONARD ZELDOW

Dental Hygiene

D.D.S., University of Pennsylvania

# STATE UNIVERSITY OF NEW YORK

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A.B., M.A., LL.D.

SEBASTIAN V. MARITORANA—Vice-Chancellor for Two-Year Colleges

B.S., M.A., Ph.D.

KENNETH T. DORAN—Associate University Dean for Two-Year Colleges

B.S., M.S., Ed.D.

Broome Technical Community College is one of the 63 campuses that comprise the State University of New York (SUNY), which was established by the State Legislature in 1948. Its 63 units include 33 locally-sponsored two-year community colleges like Broome Tech.

In addition, there are four university centers, two medical centers, 11 colleges of arts and sciences, two specialized colleges, five statutory colleges and six two-year agricultural and technical colleges.

The establishment of five more community colleges has been approved, as well as two more colleges of arts and sciences. The community colleges will be opened in Clinton, Columbia-Greene and Schenectady Counties and two in New York City. One four-year college is under construction in Westchester County at Purchase, and an upper-division college for juniors and seniors is planned in the Utica-Rome-Herkimer area.

Graduate programs are offered in 22 of the four-year colleges, with 12 of them having advanced graduate study leading to the doctoral degree.

Although the campuses of the State University are separated geographically, all are united in their purpose—to improve and extend opportunities for youth to continue their education after high school. The geographic separation, moreover, enables students to enjoy the advantages of attending relatively small colleges, even though State University is one of the largest state universities in the country.

State University is guided by its motto: "Let Each Become All He Is Capable of Being."

It is governed by a Board of Trustees, which is appointed by the Governor. Its function is to plan the total development of state-supported higher education. But each of its colleges is locally administered. Students, therefore, should write directly to the college in which they are interested for admission forms and information.

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# State University of New York Campuses

UNIVERSITY CENTERS—State University at Albany  
 State University at Binghamton  
 State University at Buffalo  
 State University at Stony Brook

MEDICAL CENTERS—Downstate Medical Center at Brooklyn  
 Upstate Medical Center at Syracuse

COLLEGES OF ARTS AND SCIENCE— College at New Paltz  
 College at Brockport College at Old Westbury  
 College at Buffalo College at Oneonta  
 College at Cortland College at Oswego  
 College at Fredonia College at Plattsburgh  
 College at Geneseo College at Potsdam

SPECIALIZED COLLEGES—College of Forestry at Syracuse University  
 Maritime College at Fort Schuyler (Bronx)

STATUTORY COLLEGES—  
 College of Ceramics at Alfred University  
 College of Agriculture at Cornell University  
 College of Home Economics at Cornell University  
 School of Industrial and Labor Relations at Cornell University  
 Veterinary College at Cornell University

AGRICULTURAL AND TECHNICAL COLLEGES (two-year) at:  
 Alfred Cobleskill Farmingdale  
 Canton Delhi Morrisville

COMMUNITY COLLEGES—(Locally sponsored two-year colleges under State University)

Adirondack Community College at Hudson Falls  
 Auburn Community College at Auburn  
 Borough of Manhattan Community College at New York City  
 Bronx Community College at New York City  
**BROOME TECHNICAL COMMUNITY COLLEGE AT BINGHAMTON**  
 Community College of the Finger Lakes at Canandaigua  
 Corning Community College at Corning  
 Dutchess Community College at Poughkeepsie  
 Erie Community College at Buffalo  
 Fashion Institute of Technology at New York City  
 Fulton-Montgomery Community College at Johnstown  
 Genesee Community College at Batavia  
 Herkimer County Community College at Ilion  
 Hudson Valley Community College at Troy  
 Jamestown Community College at Jamestown  
 Jefferson Community College at Watertown  
 Kingsborough Community College at Brooklyn  
 Mohawk Valley Community College at Utica  
 Monroe Community College at Rochester  
 Nassau Community College at Garden City  
 New York City Community College at Brooklyn  
 Niagara County Community College at Niagara Falls  
 North Country Community College at Saranac Lake  
 Onondaga Community College at Syracuse  
 Orange County Community College at Middletown  
 Queensborough Community College at New York City  
 Rockland Community College at Suffern  
 Staten Island Community College at New York City  
 Suffolk County Community College at Selden  
 Sullivan County Community College at South Fallsburg  
 Tompkins-Cortland Community College at Groton  
 Ulster County Community College at Kingston  
 Westchester Community College at Valhalla



# INDEX

## A

Academic Standards and Regulations, 12  
Academic Probation, 14  
Accident insurance, 17  
Accounting, 7, 35ff.  
Accreditation, inside front cover  
Administrative Management Program, 7, 35ff.  
Administrative Staff, 120  
Admission, 10  
Alumni, 31  
Application Procedure, 10  
Associate Degrees, 12, 13  
Athletics, 31  
Attendance Regulations, 15  
Audio-Visual Aids, 20  
Auditing Courses, 20  
Awards, for Achievement, 32  
    Financial, 21

## B

Biological Science courses, 71ff.  
Board of Trustees, of College, 120  
    of State University, 130  
Board and Room, 17  
Books, Supplies, Uniforms, 17  
Broome Tech, facts about, 4, 5  
Business Administration, 7, 35, 36  
Business courses, 75ff.  
Business Program, 7, 35ff.

## C

Calendar, 1969-70, page 2  
Campus, The, 4  
Certificate of Residence, 16  
Chemical Technology, 7, 40, 41  
Chemistry Courses, 81ff.  
Civil Technology, 7, 42, 43  
Civil Technology courses, 85ff.  
Clubs, 30  
Co-Curricular Activities, 28ff.  
Community, The, 4  
Community Colleges in State University, 131  
Computing Center and Courses, 69, 70  
Continuing Education Division, 8  
Convocations, 33  
Cooperative Work Program, 18, 26  
Course Descriptions, 69ff.  
Course Numbering, 69  
Credit by Examination, 10  
Curriculums of the College, 34

## D

Degrees Granted, 12, 13  
Degree Requirements, 12, 13  
Dental Hygiene  
    Program, 7, 44, 45  
    Courses, 87ff.  
    Expenses, 17  
Dismissal, 14  
Division of Continuing Education, 8

## E

Electrical Technology, 7, 46, 47  
Electrical Technology courses, 91ff.  
Endowment Fund Grants, 23ff.  
Engineering Secretary, 7, 35, 38, 39  
Engineering Science, 7, 48, 49  
Entrance Requirements, 11  
Environmental Health Technology, 7, 50, 51  
Environmental Health Technology courses, 90, 91  
Evening Program, 8  
Executive Secretary, 7, 35, 38, 39  
Expansion, 5  
Expenses, 16

## F

Faculty, 121ff.  
Faculty-Student Association, 20  
Federal Grants, 22  
Fees, 17  
Financial Aid, 21ff.  
Foundation (The Broome Technical Community College Foundation, Inc.), 21

## G

General Information, 16ff.  
General Studies Certificate Program, 9, 68  
General Studies Certificate courses, 118, 119  
Grades, 14  
Graduation Fee, 17  
Graduation Requirements, 12  
Grants-in-aid, 23  
Growth and Expansion, 5

## H

Health insurance, 17  
Health Sciences, 7  
History of the College, 5  
Honor Societies, 29  
Honors, 14, 32  
Housing, 17

## I

Information, General, 16ff.  
Insurance for Students, 17  
Intramural Sports, 31

## J

Job Opportunities, 26  
Job Placement, 33

## L

Late Registration, 20  
Length of Curriculum, 19  
Liberal Arts and Sciences, 7, 52ff.  
Liberal Arts and Sciences courses, 95ff.  
Library, 27  
Living Accommodations, 17  
Loans, 26

## M

Map of Campus, back cover  
Marketing Management, 7, 35ff.  
Mathematics courses, 102ff.  
Mechanical Technology, 7, 56, 57  
Mechanical Technology courses, 107ff.  
Medical Laboratory Technology, 7, 58, 59  
Medical Office Assistant, 7, 61ff.  
Medical Record Technology, 7, 60, 62, 63  
Medical Record Technology courses, 106, 107  
Music, 29

## N

Nuclear Physics Laboratory, 20  
Nursing, courses, 115, 116  
degree program, 7, 64, 65  
diploma program, 9

## O

Objectives of the College, 6  
Occupational Programs, 7

## P

Part-time Day Students, 8, 9  
Part-time Jobs, 26  
Physical Education  
courses, 111  
expenses, 17  
Physics courses, 111ff.  
Probation, Academic, 14  
Professional Societies, 29  
Programs of the College, 7ff.  
Publications, Student, 30

## R

Readmission, 10  
Regents Scholarships, 22  
Repeating Courses, 19  
Residence Requirements, 16  
Residency Certificate, 16  
Room and Board, 17

## S

Scholar Incentive Awards, 21  
Scholarships, 21ff.  
Endowment Fund, 23ff.  
Regents, 22  
Special Scholarships, 24  
Secretarial Sciences, 7, 35, 38, 39  
Service Grants, 22  
Special Programs, 8  
Sponsor of the College, Broome County, 120  
Sports, 31  
Sports for Women, 31  
State University of New York, 130, 131  
Student Activity Fee, 17  
Student Center, 26  
Student Council, 29  
Summer Session, 8

## T

Technical Programs, 7  
Transcripts, 31  
Transfer Programs, 7  
Transfer, to Broome Tech, 10  
to Senior Institutions, 19  
Trustees of the College, 120  
of State University, 130  
Tuition, 16

## V

Varsity Sports, 31  
Veterans Benefits, 22  
Visiting Faculty, 127ff.

## W

Withdrawal, from the College, 15  
from Courses, 15  
Women's Sports, 31  
Work Opportunities, 26

## X

X-Ray Technology, 7, 66, 67  
X-Ray Technology courses, 116ff.



# MAP OF THE CAMPUS

## 1. TITCHENER HALL

Engineering Science  
Liberal Arts  
Audio-Visual Center  
Nuclear Physics Laboratory

## 2. ADMINISTRATION BUILDING

Administrative Offices  
Computing Center  
Business Division

## 3. SCIENCE BUILDING

Chemical Technology  
Dental Hygiene

## 4. ELECTRICAL BUILDING

Electrical Technology

## 5. STUDENT CENTER

Bookstore  
Cafeteria  
Gymnasium  
Little Theater  
Student Lounge

## 6. MAINTENANCE BUILDING

## 7. TEMPORARY BUILDING

Classrooms  
Study Area

## 8. MECHANICAL BUILDING

Civil Technology  
Mechanical Technology

## 9. LIBRARY

Environmental Health Technology  
Medical Laboratory Technology  
Medical Record Technology  
Nursing  
X-Ray Technology

